

The Development and Maintenance of Chronic Pain and Disability

A Process Theory

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ABSTRACT

Chronic pain and associated disability are prevalent problems with considerable and widespread impact. Currently, a wealth of aetiological theories exist for these, with each focussing mainly on one small aspect of this complex area. These theories are summarised and discussed. The theories are generally cross-sectional in nature and usually focus solely on the endpoint of chronic pain and disability, rather than the ongoing processes by which chronic pain and disability are developed and maintained. Process theories are lacking in the chronic pain area.

This thesis presents a new theory examining the process involved in the development and maintenance of chronic pain and disability. The theory was derived using grounded theory methods. The participants interviewed were all currently suffering from chronic pain associated with a variety of medical diagnoses. The areas examined with respect to this research were wide-ranging, thus leading to the creation of a broad process theory. This theory encompasses much of the existing chronic pain literature in addition to identifying additional areas for examination. It proposes a data-driven micro model theory which examines the development and maintenance of chronic pain and disability at a process level.

The theory of development and maintenance of chronic pain and disability identifies background / vulnerability factors which serve to predispose the individuals to develop chronic pain. These factors are based around the core concept of attachment, and continue, in a similar form, to maintain acute and chronic pain and disability. Once individuals experience pain they enter the acute pain phase of the theory. This identifies treatment beliefs and behaviour as important factors to the development of chronic pain. This section of the theory contains a cyclical treatment process. It is influenced by the background / vulnerability factors, particularly attachment style. If acute pain persists for at least six months, the individuals enter the chronic pain section of this theory. This is again a cyclical management process, primarily driven by the individuals' implicit theories about pain management, which were found to be influenced by the core category of attachment style.

The concepts identified in this data-driven theory of the development and maintenance of chronic pain and disability are discussed in relation to the current literature. This includes chronic pain and health-related literature, existing chronic pain theories, and where applicable, general literature in the concept areas. Limitations of the study, directions for future research, and clinical implications are then presented.

PREFACE

This thesis presents an investigation, using grounded theory methods, of the development and maintenance of chronic pain and disability, culminating in a process theory. The proposed theory is discussed with respect to current literature. The thesis is divided into five chapters: Introduction, Methodology, Results, Discussion, and Conclusions.

Chapter 1 introduces the topics of pain and chronic pain, and the difficulties inherent in researching these areas. The epidemiology and prediction of chronic pain are presented in addition to a discussion of the impact of chronic pain on the individual, their significant others, and the community in general. Different treatments for chronic pain are briefly outlined and their effectiveness examined. A substantial literature review of theories of chronic pain, organised with respect to the level of theorising, is presented and discussed. This addresses many of the different theories currently published pertaining to chronic pain. The introductory chapter concludes by presenting the rationale for the current study.

Chapter 2 presents the methodology. It begins with a general discussion of the philosophy of science. The discussion progresses to consider qualitative and quantitative methods, and the advantages and disadvantages of using these. The method used in this research, grounded theory, is introduced and discussed. Finally, the procedure followed in this research is outlined.

Chapter 3 presents the results of the present research. In this chapter, the theory of the development and maintenance of chronic pain and disability, created from the data obtained in the present study, is presented with many examples, using direct quotations from the participants. The results chapter is divided into five sections. The first section is an overview; it outlines how the different sections of the theory fit together. This is followed by the presentation of the background / vulnerability factors. These are the factors that may be present before the onset of pain that increase an individual's vulnerability to develop chronic pain. These factors are organised around the construct of attachment. This core category has a strong influence throughout the rest of the theory, influencing many of the other constructs. This section leads to the acute pain section, which presents the part of the theory that addresses the first six months post pain-onset. It primarily address factors related to initial treatment of acute pain. The acute pain section runs in parallel to the pain and disability maintenance factors with respect to time. The constructs modelled in the pain and disability maintenance section are very similar to the background / vulnerability factors, but they are developmentally different due to the time-period examined and the onset of pain. The pain and disability maintenance factors continue to have effects throughout the management of chronic pain and disability section. The discussion in the

last section considers how the participants attempted to manage the many factors related to their pain. This section of the theory is based around implicit theories pertaining to pain management and the effect these implicit theories have on the choice of a management strategy. Implicit theories, again, are strongly related to the core category of attachment style.

Chapter 4 presents a discussion of many of the constructs in the theory created by this research. This chapter also introduces a range of published research. There are three main sections in this chapter. First, the literature related to the background / vulnerability and pain and disability maintenance factors is discussed. This initially focuses on the concept of attachment style, the core category of this theory, before addressing the other concepts. Second, the acute pain and management of chronic pain and disability factors are discussed together. This section focuses primarily on health-professional - patient relationships, implicit theories, strategies chosen, consequences, and adjustment. Finally, a discussion is held relating existing theories to the theory presented in this thesis.

The concluding chapter (Chapter 5) discusses the limitations of the study. It makes suggestions for future research, and considers clinical implications.

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CONTENTS

ABSTRACT	iii
PREFACE	v
ACKNOWLEDGEMENTS	vii
CHAPTER 1 INTRODUCTION	1
1.1 Nature and Definition of Pain and Chronic Pain	1
1.2 Measurement and Memory of Pain	3
1.3 Epidemiology	6
1.4 Impact of Chronic Pain	8
1.5 Prediction of Chronic Pain and Disability	9
1.6 Chronic Pain Treatment and Effectiveness	11
1.7 Theories of the Development and Maintenance of Chronic Pain	16
1.7.1 The Construction of Theory	16
1.7.2 Single Factor Theories	17
1.7.2.1 Historical Theories	18
1.7.2.2 Behavioural and Learning Theories	22
1.7.2.3 Cognitive-Based Theories	26
1.7.2.4 Family, Contextual, and Psychiatric Theories	29
1.7.2.5 Biological Theories	36
1.7.3 Comprehensive or Multifactoral Theories	38
1.7.4 Micro Models	48
1.8 Summary of Introduction	50
1.9 Rationale for Current Study	50
CHAPTER 2 METHODOLOGY	53
2.1 Philosophy of Science	53
2.2 Qualitative and Quantitative Methods	56
2.2.1 Quantitative Research	57
2.2.1.1 Advantages and Disadvantages of Quantitative Research	58
2.2.2 Qualitative Research	58
2.2.2.1 Types of Qualitative Research	59
2.2.2.2 Concepts and Processes of Qualitative Methodologies	60
2.2.2.3 History of Qualitative Research	61

2.2.2.4	Qualitative Methods	61
2.2.2.5	Credibility of Qualitative Research	63
2.2.2.6	Advantages and Disadvantages of Qualitative Research	66
2.2.2.7	Summary of Qualitative Research	66
2.2.3	Summary and Conclusions of Qualitative and Quantitative Methods	67
2.3	Grounded Theory	68
2.3.1	Introduction to Grounded Theory	69
2.3.2	History of Grounded Theory	72
2.3.3	Grounded Theory - The Method	73
2.3.4	Formal versus Substantive Theory	80
2.3.5	Judging Grounded Theory	81
2.3.6	Summary of Grounded Theory	82
2.4	Method Used in this Study	82
2.4.1	Participants	82
2.4.2	Procedure	83
2.4.3	Data Analysis	84
2.5	Overview of the Results and Discussion Chapters	85
CHAPTER 3	RESULTS	87
3.1	Overview of Results	87
3.2	Background / Vulnerability Factors	88
3.2.1	View of Others and the World	90
3.2.2	View of Self	92
3.2.3	Isolation	94
3.2.4	Skills and Social Competency	95
3.2.5	Communication	95
3.2.6	Conflict Resolution	95
3.2.7	Affect Regulation	96
3.2.8	Illnesses and Injuries	97
3.2.9	Others' Pain and Illnesses	98
3.2.10	Pathways Through the Background / Vulnerability Factors	98
3.2.11	Summary of the Background / Vulnerability Factors	100
3.3	Acute Pain	100
3.3.1	Background / Vulnerability Factors	102
3.3.2	Pain-Onset and Experience	103
3.3.3	Treatment Seeking	103
3.3.4	Treatment Adherence	105
3.3.5	Treatment Outcome	106
3.3.5.1	Cycle of Treatment	107
3.3.5.2	Successful Pain Resolution	107
3.3.6	Chronic Pain	108
3.3.7	Disability	108
3.3.8	Implicit Theories	108
3.3.9	Impeding Factors	108

3.3.10	Pathways Through the Acute Pain Section	109
3.3.11	Summary of the Acute Pain Results Section	110
3.4	Pain and Disability Maintenance Factors	110
3.4.1	View of Others and the World	111
3.4.2	View of Self	116
3.4.3	Isolation	119
3.4.4	Skills and Social Competency	121
3.4.5	Communication	124
3.4.6	Conflict Resolution	125
3.4.7	Affect Regulation	126
3.4.7.1	Workaholism	128
3.4.7.2	Perfectionism	129
3.4.8	Illnesses and Injuries	130
3.4.9	Pathways for Pain and Disability Maintenance Factors	130
3.4.10	Summary of the Pain and Disability Maintenance Results Section	132
3.5	Management of Chronic Pain and Disability	133
3.5.1	Pain Experience	135
3.5.2	Pain Variables	135
3.5.3	Implicit Theories	137
3.5.4	Beliefs and Implicit Theories Involved in Decision-Making	143
3.5.4.1	Over-Arching Factors	143
3.5.4.2	Cure Beliefs	145
3.5.4.3	Do Nothing or Ignore Beliefs	149
3.5.4.4	Manage Beliefs	151
3.5.5	Implicit Theories Relating to Health-Professionals	154
3.5.5.1	Health-Professional's Cure	154
3.5.5.2	Health-Professionals Cannot Help	155
3.5.5.3	Health-Professional Management	156
3.5.6	Treatment Progression	156
3.5.6.1	Management Strategies Varied Over Time	157
3.5.6.2	Consults Many Health-Professionals	157
3.5.6.3	Process of Treatment Progression	158
3.5.7	Constraints	158
3.5.8	Impact of Significant Others	159
3.5.9	Impact Of Health-Professionals	159
3.5.10	Choosing a Strategy	161
3.5.10.1	Under-Regulation Styles	161
3.5.10.2	Mis-Regulation Styles	163
3.5.10.3	Appropriate-Regulation Styles	169
3.5.11	Outcome	172
3.5.11.1	Dysfunctionally Managed Chronic Pain	172
3.5.11.2	Functionally Managed Chronic Pain	173
3.5.11.3	No Pain or Disability	173
3.5.11.4	Short-Term Efficacy	173

3.5.11.5	Long-Term Efficacy	174
3.5.12	Consequences of Chronic Pain	175
3.5.12.1	Positive Consequences	175
3.5.12.2	Negative Consequences	177
3.5.13	Cognitive and Emotional Adjustment	182
3.5.14	Pathways Through the Management of Chronic Pain and Disability Section	184
3.5.15	Summary of the Management of Chronic Pain and Disability Results Section	186
3.6	Summary of the Results Chapter	187
CHAPTER 4	DISCUSSION	189
4.1	Background / Vulnerability and Pain and Disability Maintenance Factors	189
4.1.1	Review of Background / Vulnerability Factors	190
4.1.2	Review of Pain and Disability Maintenance Factors	192
4.1.3	Constructs of the Background / Vulnerability and Pain and Disability Maintenance Factors	194
4.1.3.1	Attachment	194
4.1.3.2	Personality	208
4.1.3.3	Relationships	210
4.1.3.4	Social Support	212
4.1.3.5	Communication	216
4.1.3.6	Somatisation	216
4.1.3.7	School Refusal	216
4.1.3.8	Affect Regulation	223
4.1.4	Summary of Background / Vulnerability and Pain and Disability Maintenance Factors	236
4.2	Discussion of Acute Pain and Management of Chronic Pain and Disability	237
4.2.1	Review of the Acute Pain Section	237
4.2.2	Review of the Management of Chronic Pain and Disability Section	239
4.2.3	Concepts of Acute Pain and Management of Chronic Pain and Disability	240
4.2.3.1	Heterogeneity Among Chronic Pain Patients	240
4.2.3.2	Health-Professional - Patient Relationships	242
4.2.3.3	Psychological Factors	259
4.2.3.4	Implicit Theories	260
4.2.3.5	The Role of Significant Others and Social Support	268
4.2.3.6	Choosing a Strategy	273
4.2.3.7	Treatment	282
4.2.3.8	Disability	284
4.2.3.9	Dysfunctional Chronic Pain	286
4.2.3.10	Consequences	286
4.2.3.11	Adjustment to Chronic Pain	294

4.2.4	Summary of the Acute Pain and Chronic Pain Management Discussion Sections	302
4.3	Summary of the Model of the Development and Maintenance of Chronic Pain and Disability	303
4.4	Discussion Of Existing Theories Related To This Study	304
CHAPTER 5	CONCLUSIONS	311
5.1	Limitations of this Study	311
5.2	Suggestions for Future Research and Clinical Implications	313
5.3	Conclusions	314
REFERENCES		317
APPENDIX A	ETHICAL APPROVAL	347
APPENDIX B	INFORMATION SHEET	351
APPENDIX C	CONSENT FORM	353
APPENDIX D	EXAMPLE CHECKLISTS	355
D.1	Checklist #1 - Prior To The Development Of Chronic Pain	355
D.2	Checklist #2 - After The Development Of Chronic Pain	356
D.3	Patient Management Guide - for high levels of vulnerability	357

LIST OF FIGURES

3.1	Overview of the Model of Development and Maintenance of Chronic Pain.	88
3.2	Model of Background / Vulnerability Factors.	89
3.3	Acute Pain Factors.	101
3.4	Pain and Disability Maintenance Factors.	112
3.5	Management of Chronic Pain and Disability.	134
3.6	Three Dimensions of Implicit Theories of Pain.	138
3.7	A Possible Pathway Though the Three Types of Implicit Theories used to Choose Chronic Pain Management Strategies.	144
A.1	University of Canterbury Ethical Approval	348
A.2	Southern Regional Health Board Ethics Committee Approval	349
A.3	Southern Regional Health Board Ethics Committee Approval Ammendment	350

Chapter 1

INTRODUCTION

This chapter introduces the concept of chronic pain and explores its definition. It discusses the measurement of and memory for chronic pain, epidemiology, chronic pain treatment and effectiveness, prediction of chronic pain, and presents a literature review of the theories of chronic pain. The chapter concludes with a rationale for the current study.

1.1 NATURE AND DEFINITION OF PAIN AND CHRONIC PAIN

There appears to be little agreement on the definition of chronic pain or how to measure it (Von Korff, Dworkin, & Le Resche, 1990). Merskey and Spear (1967) defined pain as “an unpleasant experience which we primarily associate with tissue damage or describe in terms of tissue damage” (p. 65). This definition is typical for acute pain. Chronic pain is multidimensional affecting many areas of a person’s life and functioning and may, in consequence, require subjective components in its description. Researchers have examined the following aspects of pain: pain-behaviours, cognitive and emotional features, vegetative signs of depression, psychological distress, demoralisation, preoccupation with pain, impairment of interpersonal relationships, use of health-care and pain medication, activity limitations in work, family, and social life, and adoption of a chronic sick role (Von Korff *et al.*, 1990).

There is a need to distinguish between nociception, pain, suffering, and disability. Nociception refers to sensory stimuli affecting nerve endings which are often perceived as painful, and which might signal potential tissue damage. Pain is the perception of nociceptive inputs. Pain is a process involving conscious awareness, selective abstraction, appraisal, ascribing meaning, and learning. Although this is oversimplified as pain can be perceived in the absence of nociceptive input, such as in phantom limb pain, and may not be perceived in the presence of nociception, such as in the case of extreme distraction. Pain-behaviours are defined as any behaviours generated in response to pain. Pain can lead to suffering, although pain and suffering are not necessarily synonymous. Suffering belongs to the person and includes interpersonal disruption, economic, emotional and psychological distress, and work difficulties. Suffering is based on the perceived impact of pain on the person’s life. The person perceiving events as threatening causes the distress. Thus nociception and pain can be seen as a signal and pain behaviours and suffering as a response. Disability is a complex phenomenon that involves

tissue damage, response to the damage, and environmental factors. These factors may maintain disability even after the resolution of tissue damage (Fordyce, 1994, 1998; Mikail, Henderson, & Tasca, 1994; Turk, 1996a). These terms are often confused and can be difficult to distinguish as different researchers use slightly different definitions of them.

Other concepts commonly associated with chronic pain are disease, disorder or injury, impairment, and handicap (Ekholm, 1995). A disease, disorder, or injury can result in impairment. Impairment is defined as “any loss or abnormality of psychological, physiological, or anatomical structure or function” (Ekholm, 1995, p. 47). An impairment can be either temporary or permanent and is usually regarded as a disturbance at the level of a structure (such as a joint). Examples of impairments are weakness, reduced movement, and disruption of the sleep cycle. An impairment can result in disability when the person can no longer perform activities. A disability can be defined as a reduction in the ability to conduct a normal range of activities. An example of a disability includes difficulties in participation in household activities. An impairment or a disability may result in a handicap. A handicap is seen as being a disadvantage that limits the fulfilment of a person’s normal role. The definition is based on the person’s age, gender, culture, and social factors. A handicap is conceptualised as a difference between an individual or society’s expectations and their actual functioning. People with a handicap are placed at a disadvantage, relative to their peers, based on the norms of society. Examples of handicaps include the inability to perform normal occupational or social roles (Ekholm, 1995).

Different researchers have used different time frames when defining chronic pain, particularly in distinguishing between acute and chronic pain. For example, Seitz (1993) defined chronic pain as being pain present for greater than six weeks, if there is no apparent tissue damage, Carette (1996), Kelley (1998), Von Korff *et al.* (1990) and Nachemson (1994) used the time-frame of greater than three months, Carette (1996) and Kaplan and Toshima (1990) suggested greater than six months as a time-frame, and Block, Kremer, and Gaylor (1980) greater than eight months. Chronic pain has also been defined without a specific time period; this is usually stated as past the normal time of healing. There is a problem with the definition of “normal healing”, especially in some disorders, such as arthritis and headache, where an expected or “normal” time period cannot clearly identified (Von Korff *et al.*, 1990). Von Korff *et al.* (1990) discussed different pain states, which may address this difficulty. They are as follows: no pain, recurrent or persistent pain, severe and persistent pain, severe and persistent pain with activity limitation, and severe and persistent pain with activity limitation and pain dysfunction. This represents an advance on the dichotomous presence or absence of chronic pain, or the three-tiered system of no pain, acute pain, or chronic pain, which can be difficult to clearly define. In this study, the definition of chronic pain used was “pain that persists for longer than six months”. This was a commonly mentioned time frame, and also encompassed most of the others, thus ensuring that the pain experienced by the participants in this study was chronic.

1.2 MEASUREMENT AND MEMORY OF PAIN

Gaining a thorough and precise understanding of a participant's pain is essential in researching the area of chronic pain. However, several issues make this difficult. Some of these difficulties relate to how researchers and health-professionals actually assess and measure pain. Others relate to the fact that when assessing pain, reference is often made to past pain, both in the recent and distant past. This in turn alerts one to issues concerning memory of the multifaceted pain experience.

Modern medicine has not yet found an accurate and reliable way of objectively measuring pain. Therefore, pain assessment is primarily subjective. Given the complexity of pain, it is not surprising that health-professionals cannot easily, unidimensionally, or objectively, measure pain. In addition, pain is often measured retrospectively. This approach to measuring pain is widely used with little thought given to its reliability or accuracy. It has been found that although people have a relatively good memory for pain in the short-term, as time passes this becomes inaccurate and influenced by other factors.

A health-professional may ask about the pain that has been experienced over the last few days, weeks, months, or years. After a thorough history and clinical examination, a diagnosis is made and a course of action is prescribed. An assessment is made about whether the pain is increasing, static, or decreasing, in addition to situations, behaviours, activities, or treatment that improved or aggravated the pain. A comparison between the assessment of past and present pain may determine whether a treatment is deemed successful and whether the person should continue the treatment. Current pain is often measured and compared to previous pain experiences. Pain scales may also have anchors or descriptors that relate to past pain, such as the "most extreme pain experience", or "the worst pain you could possibly imagine". This is based upon the experience of the patient and the remembered or recalled pain experience. Despite this, remembered pain has not yet been established to be reliably accurate. Some authors (eg., Jones, 1957) have reported that pain is very hard to remember because it is an unpleasant experience and therefore it is repressed. This repression, according to psychoanalytic theory, is vital for everyday functioning (Jones, 1957).

Several studies have been conducted to examine the various aspects of remembered pain and the factors that influence the accuracy of memory. Some studies have examined acute pain and its memory over a short time period. For example, Hunter, Philips, and Rachman (1979) reported that memory of pain was "surprisingly accurate" over a time period of five days. Overall recall of pain was reported to be no worse than the recall of other events at the time. Participants recalled both the intensity and the affective quality of the pain, although the intensity of pain was recalled more accurately than the affective component. However, Hunter *et al.* (1979) reported that some of their participants were "shifters"; they shifted their ratings after the five days. They suggested that this was due to high affective and evaluative reactions to their pain. The "shifting" participants were mostly female, had high levels of pain-intensity, and used many affective words from the McGill Pain Questionnaire (MPQ), compared to those participants who were more accurate in their memory of pain, and did not "shift" their ratings. Bond and Pearson (1969) reported personality factors to be important in the experience and memory of pain. They reported that neurotic and extroverted women experience more

pain and express their pain to a larger extent.

Kent (1985) examined memory for acute pain over a longer period of time (three months), and found it to be inaccurate. His findings differed from Hunter *et al.* (1979) in the accuracy of recall of chronic pain, although he did also identify anxiety as being an important factor. It is important to note the different time frames of these two studies, five days compared with three months. Kent (1985) reported a stronger relationship between remembered pain and expected pain, than between remembered pain and experienced pain. This was especially true for people with high anxiety. Those with low anxiety remembered their pain relatively accurately, although people with both high and low anxiety remembered experiencing more pain than they reported at the time of the pain. Kent (1985) suggests that the patient's remembered pain is reconstructed over time to coincide with their anxiety levels. Non-anxious patients seem to have very accurate ideas of the pain that they expect to experience, whereas anxious patients have a much-exaggerated view of the pain that they expect to experience. People with both high and low anxiety modify their recall to coincide with their expectations. The assertion that high affect causes a distortion in memory is similar to the findings reported by Bond and Pearson (1969) and Hunter *et al.* (1979). In addition to the above findings, the inaccuracy in memory of past pain experience has been related to high emotional distress, conflict and anger at home, and to low behavioural activity (Erskine, Morley, & Pearce, 1990).

Roche and Gijsbers (1986) specifically examined whether a difference occurred between the memory of acute, temporary, single experiences of pain, and longer-term chronic pain. Both acute and chronic pain participants were tested, and then re-tested after seven days, for their experience and recall of pain. They reported that memory for episodes of acute pain was better than memory for episodes of chronic pain. The chronic pain group increased their remembered pain scores on re-testing, whereas the acute pain group did not. Participants with acute pain accurately remembered their pain, whereas participants with chronic pain recalled their pain as being more severe seven days later. Memory for the quality of the pain was more accurate than memory for the intensity of the pain. Roche and Gijsbers (1986) found the affective component of pain to be the least accurately recalled. This confirms the findings of Hunter *et al.* (1979). Jamison, Sbrocco, and Parris (1989) also reported that chronic pain patients tend to overestimate their pain-intensity levels (59% of them overestimated), even though the time period (one week) involved short-term recall. Overestimation was found to be particularly true for those in emotional distress. Recall accuracy was found not to be related to age, medication usage, medical findings, compensation status, or to pain-intensity at time of recall. Predictors of the overestimation of pain were as follows: female gender, social security payments, pain not related to a work injury, constant pain, pain interfering with activity, pain aggravated by standing, bed rest, the use of hypnotic medication or tranquillisers, high level of complaints, disharmony at home, and abnormal medical findings. Recalled pain-intensity, however, was found to be related to the following pain factors: duration, medication usage, constant pain, and a family history of pain problems. It was also related to work, behavioural and emotional factors such as: education, job concerns, employment status, limited activity, lying down, and emotional distress (Jamison *et al.*, 1989). Therefore, memory for pain is influenced by many factors other than the actual pain at the initial time of remembering.

Jamison *et al.* (1989) found no relationship between overestimation of pain and pain-intensity at the time of recall (contrary to the findings of Eich, Reeves, Jaeger, and Graff-Radford (1985)). Patients with higher pain ratings showed higher accuracy in estimating their pain than patients with low pain-intensity, or low pain ratings. This might have been due to a ceiling effect. The intensity of the pain was suggested to be most important in the accuracy of estimating pain, although physical and psychosocial factors may also have an effect. The disabling effect of the intense pain, emotional distress, and the effects of the medication may account for the overestimation of pain-intensity. This effect may be more profound in subjects with high levels of pain-intensity.

Eich *et al.* (1985), Hunter *et al.* (1979), Jamison *et al.* (1989), Kent (1985), Linton and Melin (1982), and Roche and Gijsbers (1986) all reported a systematic distortion of pain over time. Eich *et al.* (1985) also reported that memory for pain-intensity depended upon the current pain-intensity. If the current pain-intensity was high, then the participant overestimated remembered pain. Conversely, if the current pain-intensity was low, the participant underestimated remembered pain. Eich *et al.* (1985) likened these systematic distortions in the memory of pain to the systematic distortions occurring with changes in mood or affect. This is commonly described as state-dependent memory (Clark, 1983; Clark & Teasdale, 1982; Davison & Neale, 1990; Lloyd & Lishman, 1975; Teasdale & Fogarty, 1979; Teasdale, Taylor, & Fogarty, 1980). State-dependent memory indicates that a situation is more accurately recalled when the person is in the same state as when they had the experience. Distortions of pain memory may occur as a result of the same underlying process. These distortions may be due to pain not being a purely sensory construct, but also involving affect. Eich *et al.* (1985) found that these distortions were independent of treatment outcome and learning.

A difficulty with testing memory is to distinguish between the memory of the actual experience of pain and the memory of the words chosen to represent the pain. It is important to test the memory for the actual pain experience rather than words chosen from a scale to describe the pain. This can be done by using a Visual Analogue Scale rather than a Verbal Rating Scale or a Numerical Rating Scale. When using a Verbal Rating Scale, the words that have been chosen initially may be remembered and later recalled, rather than the actual pain experience. Again, with a Numerical Rating Scale, the number chosen may be remembered. With a Visual Analogue Scale, anchored only at the two ends, there are few cues as to previously chosen ratings. Linton and Gotestam (1983) reported only a modest relationship between the ratings made on a Visual Analogue Scale and those made on a Verbal Rating Scale. Thus, indicating a difficulty in the measurement, in addition to the memory, of pain.

In addition to difficulties encountered with psychometric instruments, are the difficulties of sampling. Linton and Melin (1982) found that pain is often over-estimated during pre-admission to a pain clinic. Several factors may explain this. The most frequent maybe the participants' desires to be admitted into a programme and to have their pain taken seriously. Linton and Gotestam (1983) reported that the patients first attended a pain clinic with a fixed idea in their mind about their pain. They remembered pain that was closer to this estimate of their pain, than their actual pain. Their estimate of pain was also different from their baseline pain. This suggests that they were evaluating their pain rather than just experiencing it and remembering the experience. Linton and Gotestam (1983) reported that

remembered pain was distorted and that this depended on which measure was used. This brings into play an additional element to the memory of pain. With a Verbal Rating Scale, the patients both over- and underestimated the initially reported pain when they remembered past pain. With a Visual Analogue Scale, there was mainly an overestimation of the initially reported pain.

As Erskine *et al.* (1990) discussed in their review of memory for pain, little research is published regarding memory of the different components of pain, such as the frequency and duration of pain, the cognitive, behavioural, and affective components, or the intensity of pain. Merskey (1975) and Jones (1957) suggested that chronic pain was particularly difficult because the current pain does not exist in isolation, but is confounded by memories of previous pain.

1.3 EPIDEMIOLOGY

The prevalence of pain is dependent on how it is measured. Pain is a common complaint, although for most people it does not become chronic or disabling (Hickey, 1978; Volinn, Lai, McKinney, & Loeser, 1988). For example, it is reported that up to 82% of people will have pain at some point of their lives. This includes New Zealand research (Bruttberg, Thorslund, & Wilkman, 1989; James, Large, Bushnell, & Wells, 1991; Kaplan & Toshima, 1990; Nachemson, 1994). New Zealand information suggested that 25% of New Zealanders will sustain back injuries in their lifetimes, although not all will become chronic (Hickey, 1978; James *et al.*, 1991). In an American six-month prevalence study, 63.5% of people had at least one type of pain. Forty one percent had back pain, 26% headache, 17% abdominal pain, 17% chest pain, and 12% had temporomandibular pain (Von Korff *et al.*, 1990). In a study of surveyed American employees, 31% reported neck pain and 39% reported back pain in a year (Linton, 1990). Another study reported that 5% of American adults experience low back pain every year, although most recover from their pain (Frymoyer & Cats-Baril, 1987).

Chronic pain is relatively common in the general population. Prevalence of different chronic pain conditions are as follows (chronic pain was defined as pain for 101 or more days in the preceding year): 5% headache, 9% backache, 5% muscular pain, 10% joint pain, 3% stomach pain, 1% dental pain, and 1% other types of chronic pain (Sternbach, 1986b). Back, musculoskeletal, head, abdominal, and joint pains were the most common disorders to develop chronic pain and disability (Bruttberg *et al.*, 1989; Crook, Rideout, & Browne, 1984; James *et al.*, 1991; Kaplan & Toshima, 1990). Most people experienced three or four different types of acute pain during a year (Sternbach, 1986b). Seven to thirty three percent of people in industrialised countries had recurrent or persistent pain. Two to four percent of the population had enough impairment to gain compensation (Bruttberg *et al.*, 1989; Crook *et al.*, 1984; Crook & Tunks, 1985; Kelley, 1998; Magni, Caldieron, Rigatti-Luchini, & Merskey, 1990; Sanders, 1985). Psychosocial factors played an important role in these differences. Sweden, for example, with its high benefits, had high disability rates (Nachemson, 1994). Crook *et al.* (1984) reported that 60% of persistent pain lasted for over three years. Sixty percent of persistent pain-sufferers had a parent who suffered from persistent pain. Sixty-eight percent of pain was of unknown origin (Crook *et al.*, 1984). Fordyce (1998) reported that greater numbers of back injuries are becoming chronic, with a higher level of disability. This is occurring in the United King-

dom, America and Sweden, and probably in many other countries. It appears that the medical, legal and disability status of back injuries are changing, although there is no evidence that the neurophysiological status of the injuries are changing. These appear to be related to cognitive and behaviour factors, particularly the role of ambiguity in acute pain management Fordyce (1998) argues.

Although chronic pain is a relatively common experience, only 16%-18% of those reporting pain had visited a health-professional regarding their pain in the past year (Linton, 1990). Another study found only 3% of people had consulted a pain specialist about their pain (Sternbach, 1986b). Even 18% of people who rated their pain as severe or unbearable did not consult a health-professional, as they did not think that a health-professional could help (Sternbach, 1986b).

Pain affects both genders (Kaplan & Toshima, 1990). Some researchers have found no gender differences in pain (eg., Bruttberg *et al.*, 1989; Von Korff *et al.*, 1990). When gender differences were found, women generally reported more pain than men (eg., Crook *et al.*, 1984; James *et al.*, 1991; Magni *et al.*, 1990; Von Korff *et al.*, 1990). The prevalence for most types of pain has been reported to increase with age (Crook *et al.*, 1984; James *et al.*, 1991; Magni *et al.*, 1990). There are some exceptions. For example, Von Korff *et al.* (1990) reported that pain was not associated with age. Bruttberg *et al.* (1989) reported that there were differences due to age, however they found that the 45-65 year age range had the highest rate of pain.

Pain affects all social classes (Kaplan & Toshima, 1990) although it is more prevalent in some. Presence of pain has been found to be associated with lower income, lower level of education, and unemployment (Crook *et al.*, 1984; Magni *et al.*, 1990; Von Korff *et al.*, 1990). Bruttberg *et al.* (1989) however, reported no differences in employment status. People with high pain states are more likely to: be separated, divorced or widowed, have high family stress, rate their health as poor, and have a high use of prescription medicines (Crook *et al.*, 1984; Von Korff *et al.*, 1990). No significant difference has been found in pain states for religion or occupation (Crook *et al.*, 1984). Pain dysfunction, as opposed to pain specifically, has been related to low income, unemployment, high family stress, anxiety, depression, somatisation, poor health status, increased use of health-care, and greater than ten prescriptions a year specifically for pain medication (Von Korff *et al.*, 1990). The incidence and consequences of pain have been described in many countries (Kaplan & Toshima, 1990). Therefore it is likely that pain spans cultural and ethnic divides.

The greater the duration of disabling low-back pain, the greater the likelihood of long-term chronic pain and disability. Studies have shown that if pain is present after six months (that is chronic pain) this signals difficulties. Further, after one year only 20%-40% of people in pain returned to work. After two years of chronic pain and disability, the rehabilitation rate was nearly zero (Frymoyer & Cats-Baril, 1987). This suggests early identification of those at risk for chronic pain and rehabilitation of such individuals is essential. Early identification and rehabilitation is likely to have cost effective benefits (Frymoyer & Cats-Baril, 1987). Additionally, the rate of disability associated with pain is increasing. An American study has shown the rate of disability exceeded the rate of the population increase by 14 times between 1977 and 1981 (Frymoyer & Cats-Baril, 1987).

1.4 IMPACT OF CHRONIC PAIN

Chronic pain is widespread. Some researchers have gone as far as describing it as an epidemic (Kugelman, 1997; Nachemson, 1994). Chronic pain is a major consumer of health-care resources and medication (Crook *et al.*, 1984; Linton, 1994). This is despite the fact that many chronic pain patients do not seek medical help. Chronic pain has major effects on the individual, family, community, and country. Chronic pain is devastating. It has widespread personal, economic, and psychosocial effects (Hickey, 1978; James *et al.*, 1991; Kaplan & Toshima, 1990; Seitz, 1993; White, LeFort, Amsel, & Jeans, 1997).

Chronic pain has been related to unemployment (short and long-term), compensation, and medical payments (Crook *et al.*, 1984; Frymoyer & Cats-Baril, 1987; Linton, 1994; Nachemson, 1994). It also affects the families of chronic pain patients (Linton, 1994). Chronic pain interferes with activities of daily living (Bruttberg *et al.*, 1989; James *et al.*, 1991). It can cause stress, decreased confidence, and disability (James *et al.*, 1991; Kaplan & Toshima, 1990; Linton, 1994). Pain commonly limits short-term activity (Von Korff *et al.*, 1990).

Chronic pain has major socioeconomic implications. It has been estimated that the cost of chronic pain may account for about 10% of the United States of America's national budget through working time lost, health-professional services, and direct compensation (Sanders, 1985). In 1990, it was estimated that, on average, US\$330 was spent annually on chronic pain for every person in the United States of America. This excluded any secondary difficulties, or co-morbidities relating to chronic pain, such as depression (Seitz, 1993). Full time employees lost, on average, five days per year due to pain. Considering all types of employment groups, 23 days, on average, were lost per year, due to pain (Sternbach, 1986b). This indicates that many chronic pain patients may not be in full time employment. Chronic pain is the most common cause of long-term work disability (Von Korff *et al.*, 1990). Nearly a quarter of chronic pain patients changed their jobs because of pain. Eight and a half percent took over a month off work because of their pain, and 7.9% had between one and thirty days off work because of pain (Magni *et al.*, 1990). Chronic pain is associated with frequent use of pain medication and the health-care system (Crook & Tunks, 1985).

Pain states are strongly related to anxiety, depression, and somatisation (Von Korff *et al.*, 1990). Depression is more than twice as common in chronic pain patients as compared to those without chronic pain (Magni *et al.*, 1990). Studies have shown that between 10% and 100% of people who suffer from chronic pain also suffer from depression. It should be noted though, that most studies investigating the link between chronic pain and depression use samples from a hospital or pain clinic rather than the community (Magni *et al.*, 1990).

Psychological impairment and impaired social relationships are features associated with severe and persistent pain. Great differences in psychological impairment and illness-behaviour have been shown between people with comparable pain experiences (Von Korff *et al.*, 1990). A strong association between stress, "hassles", and pain has been found. "Hassles" were defined as minor ongoing stresses. They were reported to have a significant impact on health. Locus of control was also reported to be

an important factor. Locus of control refers to whether a person believes that they have control of events, or whether they externalise that control. A high internal locus of control led to a low level of pain and a high level of healthy behaviour (Sternbach, 1986a). Emotional distress is common in chronic pain patients. This could be due to inadequate or maladaptive coping strategies, inadequate support, inappropriate use of medication, or an inability to participate in a normal range of activities, such as employment, sleep, financial, or legal difficulties (Turk, 1996a).

Pain-behaviours (behaviours in response to pain) have a large impact on chronic pain. People with a high level of pain show many times more dysfunctional pain-behaviours than those with low levels (Von Korff *et al.*, 1990). People with pain plus adaptive difficulties are more likely to get chronic pain (Crook & Tunks, 1985).

In summary, not only is chronic pain a prevalent disorder, it is also increasing in frequency, causing greater disability and higher usage of resources. It has a high impact on the individual, family, community, and country. Chronic pain is a very serious health and economic problem. As Sanders (1985) said, "we would appear to be dealing with a problem of epidemic proportion" (p. 5).

1.5 PREDICTION OF CHRONIC PAIN AND DISABILITY

Researchers have tried to predict who will develop chronic pain from acute pain, who will develop disability, and which pain management strategies will work for which people. Most research has examined only specific and singular attributes. Most research has been retrospective rather than prospective, and thus is open to a number of biases as research participants remember back to the desired situations or events. As a result, the information is somewhat influenced by the participants' current status, and their experiences between the situation or event and the time of questioning.

The most consistent predictor of acute low-back pain found by Singer, Gilbert, Hutton, and Taylor (1987) was reported pain-intensity at the initial health-professional visit. They related high initial pain-intensity with length of recovery time and a high probability of continuing pain. White *et al.* (1997) reported no significant chronic pain prediction differences which related to the initial acute assessment. They indicated that this result differed from other prospective studies. Differences were found at three weeks after the initial assessment which predicted chronic pain outcome. Those who later developed chronic pain reported higher pain-intensity, spent more time in hospital, but needed less surgery, and reported minimal improvement in pain-intensity between the initial acute assessment and a three-week follow up (White *et al.*, 1997). This lack of improvement was the primary factor distinguishing those who developed chronic pain from those who did not (White *et al.*, 1997). Pain that does not resolve early is less likely to resolve at all.

Risk factors for chronic back and neck pain were also found to be physical, related to trunk movements and nerve-root damage (Hellsing, Linton, & Kalvemark, 1994). Murphy and Cornish (1984) also reported physical factors related to the development of chronic pain. Specifically, people who developed chronic pain had a wider and deeper area of pain and engaged in less activity. Level of activity was also reported by White *et al.* (1997) to predict pain, in addition to the diagnosis, particu-

larly of trauma or fractures. In summary, physical variables have been found to have some predictive validity in chronic pain outcome.

Several psychological variables have been used to predict chronic pain. Cognitive variables, both situation-specific and general, were highly related to pain and disability. Flor and Turk (1988) reported that cognitive variables had a greater influence on pain and disability than disease-related variables. Situation-specific and general cognitive variables accounted for 32%-60% of variance in pain and disability. The disease-related variables added very little to the prediction of this variance (Flor & Turk, 1988). Beliefs about the resolution of pain may also contribute to the risk of developing chronic pain (White *et al.*, 1997). It is important to identify attitudes and beliefs about pain in treatment planning, as they may influence compliance with treatment, treatment outcome and coping with pain, and thus affect pain outcome (White *et al.*, 1997). Chronic pain is predicted by anxiety, with chronic pain patients reporting higher anxiety (Murphy & Cornish, 1984). As pain persists, anxiety and distress persist. This may be because pain leads to continuing anxiety and distress, rather than anxiety and distress causing increased pain (White *et al.*, 1997). Patients who developed chronic pain reported more distress, were less independent and less certain that their pain would resolve, and were more likely to have a diagnosis of trauma than those not developing chronic pain (White *et al.*, 1997). Chronic pain is thought to run in families, with those people whose parents have suffered from severe pain being more likely to have pain (Sternbach, 1986a). It is unclear whether this is genetic or learned. Alcohol-use disorders may also be risk factors for chronic pain (Atkinson, Slater, Patterson, Grant, & Garfin, 1991). In addition, many chronic pain patients have evidence of hyperactivity pre-pain-onset. Thus, it is possible that this hyperactivity is dispositional. Hyperactivity may be related to perfectionism, which has been found to be a risk factor for chronic pain (Van Houdenhove, 1986). There is a strong relationship between stress and frequency of pain, with higher stress being related to higher incidence of pain (Sternbach, 1986a). Notably, working mothers had more stress and pain than other groups (Sternbach, 1986a).

Research has suggested that the presence of chronic pain and disability is related to employment and other psychosocial and demographic variables. Volinn *et al.* (1988) suggests that disability, associated with chronic pain, is a result of distress. In particular, if there is job or economic insecurity, then the rate of disability associated with chronic pain will rise. Socioeconomic factors have been found to account for about 33% of the variance in insurance-claim rates, and are also related to unemployment rates associated with chronic pain (Volinn *et al.*, 1988). Ergonomic factors were reported as being related to pain-onset. Psychosocial work environment, work content, and social support were also found to be indicative of disability associated with chronic pain (Linton, 1990). Cats-Baril and Frymoyer (1991) reported that important factors in predicting disability were characteristics of the job, employment status, compensation status, past hospitalisations, and educational level. They noted a lack of psychological factors in their predictive model. Many researchers have found that gender, age, education, and marital status were related to reported back pain and treatment outcome (Hudzinski & Levenson, 1985; Reisbord & Greenland, 1985; Sternbach, 1986b; Woodrow, Friedman, Siegelau, & Collen, 1972).

Pain and disability varies in different people, but also within a person at different times. This is due to psychological, physical, and social factors affecting pain and functioning. Dworkin, Von Korff, and LeResche (1992a) suggest that no single factor can adequately explain these changes and that several researchers have attempted to identify people at risk of developing pain and disability based on physical or psychiatric factors. More recently researchers have included cognitive factors and pain-behaviours in their risk prediction (Dworkin *et al.*, 1992a). As Turk (1990) suggested, an integrative approach needs to be taken combining physical, psychosocial, and behavioural factors, to better understand the development and maintenance of chronic pain and disability.

No single theory explains adequately why chronic pain develops in some people but not others. Interactions of different factors might increase vulnerability, whereas individually they may not (White *et al.*, 1997). It is interesting to note that although several researchers have found varied predictors of chronic pain and its outcome, these predictors are not consistently replicated. For example, research has not consistently predicted outcomes based on demographics, pain-history, disease status, prior treatment, compensation, or psychological factors (Turk, 1990). Similar inconsistent research results have been found for psychological variables predicting attrition from treatment (Turk, 1990). Personality, as measured by the Minnesota Multiphasic Personality Inventory was not a valid predictor of response to, or outcome of, treatment (Cummings, Evanski, Debenedetti, Anderson, & Waugh, 1979). Risk was not related to age, amount of pain, or handicap (Hellsing *et al.*, 1994). Depression was not related to risk of developing chronic pain (Atkinson *et al.*, 1991). No differences were reported between people in different income brackets (Sternbach, 1986b).

In summary, although many researchers have found factors that predict chronic pain, treatment outcome, and disability, these factors are not generalisable or consistently found among the chronic pain population. There is still much work to be done in this area.

1.6 CHRONIC PAIN TREATMENT AND EFFECTIVENESS

Over three-quarters of those with severe and persistent pain were reported to have sought treatment for their problem (Crook *et al.*, 1984; Magni *et al.*, 1990; Von Korff *et al.*, 1990). Despite this, it appears that most chronic pain does not respond to treatment, even though medical treatments are often effective in treating acute pain (Linton, 1994; Magni *et al.*, 1990). More than 60% of pain patients were taking medication (Crook *et al.*, 1984). However, many (64-91%) chronic and acute pain patients did not think that others could help their pain (Crook *et al.*, 1984). The large number of people with this belief may be the reason why the number of people reported to be seeking treatment is so variable. In chronic pain, psychosocial factors may be particularly important in determining treatment effectiveness (Nachemson, 1994).

There are many treatments used by chronic pain patients for their pain. Many have published literature supporting their use. However this can be confusing. Chambless and Hollon (1998b) attempt to clarify some of this confusion by clearly defining efficacy, effectiveness and efficiency. They define "efficacy" as the treatment being found to be beneficial in controlled research. This is usually a statistically significant result. They also state that to be considered an "efficacious treatment" a treat-

ment needs to have been found to be efficacious in two independent rigorous studies. "Effectiveness" is more than the treatment being able produce change under controlled conditions, it is determined by whether it can be shown to work in actual clinical practice. Chambless and Hollon (1998b) suggest that quasi-experimental and nonexperimental in addition to experimental designs may be used to ascertain this. To be truly effective the treatment needs to be able to be generalisable across populations, therapists and settings. It needs to be easy to use and acceptable by both clinicians and patients and patents need to comply with it. Finally, "efficiency" refers to the cost-effectiveness of the treatment (Chambless & Hollon, 1998b). Unfortunately, these distinctions are not clear in the literature. Chambless and Hollon (1998b) and Kendall (1998) suggest that research needs to be conducted into treatments in the order presented, firstly into efficacy, then into effectiveness and finally in to cost-effectiveness. Kendall (1998) also discussed the difficulties in identifying what he labels "empirically supported psychological therapies" due to language difficulties. He distinguished between "empirically validated", "empirically supported", and "empirically evaluated" treatments. "Empirically validated" suggests that a treatment is proven effective, although this process is never complete, and psychological treatments do not produce complete success. This is taken to include at least two acceptable empirical supporting studies. "Empirically supported" suggests one acceptable empirical study. "Empirically evaluated" implies that the study or studies were supportive, but this is by implication only.

Short-term efficacy has been shown for most treatments. Treatment has been shown to lead to significantly reduced pain-behaviours, reported pain, and depression (Romano, Syrjala, Levy, Turner, Evans, & Keefe, 1988). Efficacy of different treatments is probably most attributable to what they have in common, rather than their differences (Malone & Strube, 1988). Psychological treatment success may be due to the treatment reducing anxiety and depression, rather than pain (Malone & Strube, 1988). For the non-medical treatment of chronic pain, effect sizes were positive, but modest (ranging from 0.46 to 2.74) (Malone & Strube, 1988). This may indicate that, although there was a significant statistical difference, clinically this difference may not produce significant changes in the lives of the participants. In addition, about 25% of patients who initially do well deteriorate soon after treatment completion and quickly return to pre-treatment levels of pain and disability (Painter, Seres, & Newman, 1980). Treatment-efficacy is also dependant on the outcome measures used. For example, mood showed greater response to treatment than pain-intensity, duration, or frequency (Malone & Strube, 1988). Therefore, assessment of treatment needs to address a wide range of areas to identify gains. Effective treatment for chronic pain should address pathophysiological, psychological, and functional factors (Barkin, Lubenow, Bruehl, Husfeldt, Ivankovich, & Barkin, 1996).

There is evidence for efficacy of behavioural treatment. Linton (1986) reported that treatment gains were maintained, although people used behavioural techniques at lower rates than therapists suggested they should. Compas, Haaga, Keefe, Leitenberg, and Williams (1998) and Chambless, Baker, Baucom, Beutler, Calhoun, Crits-Christoph, Daiuto, DeRubeis, Detweiler, Haaga, Bennett Johnson, McCurry, Mueser, Pope, Sanderson, Shoham, Stickle, Williams, and Woody (1998) identified behavioural therapies as effective. Some researchers have reported that treatment gains were not maintained. For example, Keefe and Lefebvre (1994) reported that behavioural self-control skills and

cognitive therapy both reduced health-care usage on a short-term basis, but these treatment gains were not maintained.

Behavioural therapy programmes have been reported to be effective in increasing activity, exercise tolerance, mobility, strength, fitness, and return to work. They decrease medication and health-care utilisation, physical and psychosocial disability, and impairment. Behavioural therapy can also improve mood and reduce pain-levels (Compas *et al.*, 1998; Fordyce, Brockway, Bergman, & Spengler, 1986; Keefe & Lefebvre, 1994; Linton, 1986; Turner & Clancy, 1988).

Different researchers have demonstrated the effectiveness of different components of behavioural therapy. Biofeedback behavioural treatments were reported to be effective in causing a significant decrease in headache pain for 82% of patients over 20 months (Hudzinski & Levenson, 1985). Linton (1986) and Compas *et al.* (1998) reported that biofeedback had mixed results. Exercise has been shown to contribute to the short-term positive outcome of behaviour therapy (Keefe & Lefebvre, 1994). Contingent social reinforcement led to an increase in activity and reduction in pain-behaviour (Keefe & Lefebvre, 1994). Physical therapy was reported to be consistently effective. Although the particular causal parts of these treatments have not yet been identified (Fishbain, 2000).

Relaxation, used as a coping and pain-management strategy, was reported by Linton (1986) and Compas *et al.* (1998) to be effective in controlling pain-levels, although relaxation with biofeedback had mixed results. Relaxation training improved ratings of pain, depression, disability, and physical and psychosocial dysfunction. It increased patients' ability to tolerate pain and participate in normal activities (Turner, 1982). The longer-term effectiveness of relaxation is still being debated, and may be dependent on the measures used. Turner (1982) found that as early as a one-month follow-up, patients participating in relaxation-training showed no further improvement and had an increase in pain. Despite this, these patients had reduced health-professional usage at the 18-24 month follow-up. Contrary to that finding, Turner and Jensen (1993) reported that both relaxation-training alone, and cognitive therapy plus relaxation-training, were effective in reducing pain-intensity, depressive symptoms, and disability. These gains were maintained at 12 months.

Antidepressant medication has been found to be consistently effective in the treatment of chronic pain (Fishbain, 2000). Even though medication treatment is reported to be effective, this does not mean that all, or even most patients, have no pain following treatment. For example, one drug treatment study resulted in substantial relief for 40%, moderate relief for 30%, slight relief for 23% and no relief for 7% (Merskey & Hester, 1972).

There is support for non-physiological factors in chronic pain, particularly the placebo effect, having positive effects in reducing pain. Pain appears to be responsive to almost any treatment (Turk, 1996b). Placebo medication significantly reduces pain in a third of patients. A placebo is about half as effective as the drug it replaces in double blind conditions. Thus, it could be considered an independent potent therapeutic agent (Evans, 1974). The placebo effect may have a greater effect in patients with generalised anxiety (Evans, 1974). It is not fully known how the placebo effect works. Conceivably it works because of the hope and expectation installed during the drug-giving process, or as a result of reduced anxiety, both these factors may reduce pain (Evans, 1974).

The effectiveness of cognitive-behavioural treatment has been demonstrated with a wide range of chronic pain disorders (Chambless *et al.*, 1998; Compas *et al.*, 1998; Fishbain, 2000; Turk & Meichenbaum, 1994; Turner & Jensen, 1993). Cognitive-behavioural treatment has resulted in a reduction of physical and psychosocial disability, pain ratings, and depression (Compas *et al.*, 1998; Turner, 1982; Turner & Clancy, 1988). On the other hand, effectiveness has not always been demonstrated. In 1982, Tan stated “scientific evidence for the efficacy of cognitive and cognitive-behavioral methods for clinical pain attenuation is somewhat meagre” (p. 201). Since those early days, cognitive-behavioural therapy has been reported to be consistently effective (Chambless *et al.*, 1998; Compas *et al.*, 1998; Fishbain, 2000; Turk & Rudy, 1990). Some research indicates maintenance of gains for up to two years (Fishbain, 2000; Turk & Meichenbaum, 1994; Turner, 1982; Turner & Jensen, 1993). However, very little is known about which patients will benefit from a particular treatment, or which specific parts of the treatment are effective (Fishbain, 2000; Turk & Meichenbaum, 1994).

Small-group therapy is common in pain treatment centres. This treatment usually focuses on changing problematic behaviour, attitudes, and emotions (Weir, Woodside, & Crook, 1988). Pain-centre treatment, antidepressants, physical therapy, and cognitive-behavioural treatment have all been found to be consistently effective (Fishbain, 2000; Turk & Rudy, 1990). Several researchers have suggested that chronic pain should be assessed and treated by a multidisciplinary team of specialists working together and using pharmacological, sensory, and psychological treatment to complement each other (Barkin *et al.*, 1996; Melzack, 1974).

Despite the research seeming to indicate the effectiveness of treatment for chronic pain, many patients diagnosed with chronic pain do not respond to the treatments used (Turk, 1990). This is suggested by a large number of researchers. Despite advances in chronic pain management, there continues to be a substantial proportion of people who do not appear to benefit from treatment interventions (Turk, 1990). Consequently, Linton (1986) has stressed the need for prevention of chronic pain. As Donovan and Watt-Watson (1992) state “poor pain relief continues to be a problem for both patients and professional caregivers. Millions of people experience acute and chronic pain every year, yet effective pain management seems elusive” (p. 3). The optimal outcome for any treatment or management programme is that the person can fully resume a normal way of life. This is not possible for many chronic pain patients (Fordyce, 1974b). Donovan and Watt-Watson (1992) state that pain can be reduced at four levels: at the peripheral sites of pain (for example, application of cold or use of non-opioid analgesics); in the spinal cord (for example, by the use of massage, heat or tricyclic antidepressants); in the brain stem (for example, by opioid analgesics and tricyclic antidepressants); and in the cortex (for example, by cognitive techniques, such as relaxation). However, with all of these methods of pain control, pain is still not adequately managed. Melzack (1974) suggests “we should aim not at totally abolishing pain but rather at reducing it to bearable levels” (p. 280).

Although research sometimes finds statistically significant differences between treatment groups and control groups or between pre and post-treatment, these changes may not be clinically significant. The difference between statistical significance and clinical significance is very important. This is the efficacy versus effectiveness debate discussed by Chambless *et al.* (1998), Chambless and Hollon

(1998b) and Compas *et al.* (1998). Research usually focuses on statistical significance. This means that effectiveness, as reported by research studies, is likely to be different to that encountered by chronic pain patients, and health-professionals in their practice. This is because a treatment may be considered effective by a research study if it reduces pain by, say 50%. However, the patient who has their pain reduced by 50% may still have significant pain, consequences, and disability. Therefore they may still present to their health-professional for additional treatment or management. As a result, the person and their health-professional may not consider the initial treatment to be clinically effective. Additionally, people with pain often think of a treatment as effective if it “cures” their pain, eliminating it completely and permanently. If this were the definition used by research for “effectiveness” of a treatment, the rates would be substantially lower.

Despite many chronic pain patients initially benefiting from treatment, these gains often subsequently deteriorate. Those who have subsequent deterioration have been reported to have less incentive to maintain their changes. Lack of treatment maintenance is related to monetary compensation. Those failing to maintain changes also report being more depressed, passive, and dependent. As a result, they had not changed their environments to accommodate the changes they had made. Instead they reverted back to previous reinforcement for pain-behaviours (Painter *et al.*, 1980). Therefore, changes and treatment also need to focus on employment, attitude change, treating depression, and changing reinforcement schedules, possibly by involving the family (Painter *et al.*, 1980). Despite this, most treatments do not emphasise, or often even include, families or significant others in their programmes.

There are several methodological difficulties with some of the studies on the efficacy and effectiveness of chronic pain treatment. Problems include short follow up periods, the measures of change used, and the use of control groups. When evaluating treatment-outcome studies it is important to consider the limiting factors, particularly who was referred, and what types of patients were offered, received and completed treatment, for example, pain-clinic versus general chronic pain patients, or those suffering from different chronic pain disorders. Taking all these factors into account, the generalisability of these studies to the general population needs to be questioned (Turk & Rudy, 1990). Patients in research treatment-programmes are likely to be more highly motivated than general chronic pain patients. This needs to be considered when examining outcome studies (Turk & Rudy, 1990). In addition, the outcome depends on the measures used (Dalton, Toomey, & Workman, 1988). For example, speciality pain-clinic groups were significantly different from general-practice pain-sufferers, especially in pain-behaviour and emotional variables. A pain-clinic group reported nearly three times less pain resolution over two years than a general-practice group (Crook, Weir, & Tunks, 1989).

There have been few attempts to match a patient and their characteristics to different treatments, yet it appears most important to identify which treatment will most benefit a particular individual and under what circumstances (Compas *et al.*, 1998; Turk, 1990).

Many researchers suggest that elimination of pain is not possible for all, or even most, chronic pain patients. If elimination or even reduction of pain is not possible, it is important use other outcomes to assess effectiveness. Greenhoot and Sternbach (1974) suggest that the only adequate measure of treatment-outcome for pain relief is pain-behaviour, indicating that functionality, rather than pain-

intensity, is important. Other suggested aims for treatment are to reduce health-utilisation costs and encouraging the patient not to consult many health-professionals or to engage in ineffective surgery or high medication usage (Fordyce, 1974b). Although this may reduce the financial cost of chronic pain, it probably does little to help the chronic pain patient.

In summary, chronic pain is a prevalent disorder. It has a high impact on the sufferer, and their friends, family, and community. As yet, chronic pain cannot be consistently predicted. There is no clearly clinically effective long-term treatment for chronic pain. The next section will address the models of the development and maintenance of chronic pain that should be used to guide the prevention and treatment process.

1.7 THEORIES OF THE DEVELOPMENT AND MAINTENANCE OF CHRONIC PAIN - LITERATURE REVIEW

In this section, theories for the development and maintenance of chronic pain are discussed in the context of a review of the relevant literature. This is followed by a statement of the rationale for the current study.

The literature review of the theories of chronic pain is structured as follows. First, an overall framework is provided. Second, a number of specific theories are discussed. These include historical perspectives; behavioural, learning and cognitive theories; family, genetic, psychiatric and contextual theories; and finally biological theories. Third, multifactorial theories are reviewed. These usually combine several aspects from single factor theories, often by using a theoretical framework. Finally, the review of theories is completed by an outline of micro models. These theories discuss the process of development of chronic pain.

1.7.1 THE CONSTRUCTION OF THEORY

Ward and Hudson (1998) developed a meta-theoretical framework to examine the development of theory in the area of sexual offending. This framework is generalisable to many areas of psychology. The existing theories on the development of chronic pain suit analysis by this framework.

Ward and Hudson (1998) suggested a tri-level framework to organise existing literature in an area of study. They took the first level to comprise a comprehensive framework of multifactorial theories. These are usually an imprecisely associated group of constructs, with the aim of articulating an overarching theory, which could ultimately lead to the production of a highly integrated theory. The second level contains middle level theories. These focus on single factors, often derived from the material contained in the level one models, but in greater depth. Level three comprises micro models. These provide descriptive process models of the interactive processes of the individuals experiencing the problems that are being explained. Ultimately, process are what these micro theoretical models need to explain.

There appears to be a lack of integration of single factor theories in the chronic pain area. Researchers appear to be working in relative isolation and not examining the broader picture to identify the gaps

in the chronic pain literature in order to drive sound development of theory at all levels. The chronic pain area has many single factor theories, analogous to the “middle-level theories” of Ward and Hudson (1998). Each advances an explanation of a particular single factor important in the chronic pain area. Some have been loosely linked together to form comprehensive or multifactorial theories. Multifactorial theories though, tend to have little empirical support. The chronic pain area appears almost entirely to lack what Ward and Hudson (1998) label “micro models”. These are descriptive models that specify the intricate factors and processes associated with chronic pain, which include the cognitive, psychophysiological, biological, behavioural, motivational, interpersonal, and social factors that are involved in the development and maintenance of chronic pain. In order to explain adequately the chronic pain area, research into, and construction of, theory at all three levels should be encouraged. There needs to be an integration or binding of theories within and between these levels. Researchers need to “knit” their theories with other similar theories in this field, rather than focussing primarily on the differences between theories. In the field of chronic pain, it appears that many ideas have emerged but they are neither developed fully nor integrated. There is, however, a wealth of information concerning some aspects of chronic pain. These ideas have been well researched, but again without integration with other published literature.

A framework for the accumulation of theories, similar to that proposed by Ward and Hudson (1998), was suggested by Novy, Nelson, Francis, and Turk (1995). They used the names “restrictive” and “comprehensive” theories to identify what Ward and Hudson (1998) call middle level (level two) and multifactorial (level one) theories, respectively. The comprehensive theories can mostly provide, and account for, the confirmatory evidence that supports them. They are broader and more integrative than restrictive theories. Restrictive theories, on the other hand, may not necessarily account for the evidence supporting another incompatible theory (Novy *et al.*, 1995). Different levels of theory are useful in the development of an area. However, different researchers have developed their theories using different terms and explanatory constructs.

Many theories are available to account for why acute pain becomes chronic in some people and not in others. These theories are generally single factor in nature, that is, they focus only on one aspect or dimension of chronic pain. Individually, they are very important to the field of chronic pain, as they may describe one particular feature of chronic pain very well. However, their narrow focus makes each of them adequate to explain only a small aspect of why chronic pain is developed or maintained.

A summary of the significant theories for chronic pain follows. The earlier significant theories were often theories of pain in general, and did not differentiate between chronic and acute pain. Middle level, or single factor theories are presented first. They are either historical or have often been used in the development of comprehensive or multifactorial theories. Comprehensive or multifactorial theories are then presented. Finally, micro models will be briefly discussed.

1.7.2 SINGLE FACTOR THEORIES

There are many single factor theories in the chronic pain literature. Some of the main theories are described below. They are loosely collected under the following headings: historical theories, be-

havioural and learning theories, cognitive theories, family, contextual, and psychiatric theories, and biological theories.

1.7.2.1 Historical Theories

Although many of these historical theories are no longer in use today, they provided a valuable background for many of today's theories of chronic pain. These include: sensory/biomedical theories; pattern theories; psychoanalytic theories; psychogenic pain theory; and resistance to health theory.

SENSORY/BIOMEDICAL THEORIES

Specificity, biogenic, unidimensional sensory, disease-medical, and biomedical-disease theories suggest that pain receptors relay pain information directly to the brain. Pain is therefore equivalent to tissue damage. These theories consider pain to have a direct one-to-one relationship with injury. Any psychosocial factors present are considered to be secondary to pain (Peyrot, Moody, & Wiese, 1993). Etiology is thought to form a linear relationship with the symptomatology (White, 1990). These theories suggest that health-professionals should attempt to identify the underlying pathology producing pain-behaviours. The pathology can then be treated, reducing the symptoms (Fordyce, 1974a). These theories neglect the cases in which symptoms exist yet no pathology can be found. The disease-medical and biomedical-disease theories, characterise pain in terms of stimulus-response. These theories see pain as a sensation (like sight or touch) and that there is a direct relationship between stimulus and pain (Kugelmann, 1997).

There are many practical problems with these theories. They are not supported by empirical research (Peyrot *et al.*, 1993). There are several empirical findings that do not fit with these theories. Firstly, people with similar physical abnormalities vary in their reported pain. People without pain often have evidence of physical abnormalities. People with minimal physical abnormalities often report extreme pain (Turk, 1996a). Secondly, surgical procedures to physically destroy neural pathways often fail to remove pain (Flor, Birbaumer, & Turk, 1990; Turk, 1996a). Furthermore, there are cases of spontaneous pain with no obvious tissue damage, such as phantom limb pain (Melzack & Wall, 1965, 1988). Additionally, pain can spread to areas where no pathology is found. Thirdly, people with similar physical abnormalities and similar treatments vary in the extent of their pain reduction (Turk, 1996a). Fourthly, there are only small relationships between physical impairment, physical functioning, reported pain, disability, and response to treatment (Turk, 1996a). Pain is not always temporally consistent with the stimulus. The amount of pain can be partially determined by psychological variables, and intense noxious stimuli occasionally do not produce any pain (Melzack & Wall, 1965, 1988). Peyrot *et al.* (1993) experimentally tested a sensory theory and reported that their data did not support this theory. Essentially, these theories are overly simplistic in their view of pain.

PATTERN THEORIES

Pattern theories were an attempt to bridge the gaps in sensory theories when modelling chronic pain. Several forms of pattern theory were suggested (Melzack, 1993). According to pattern theory, pain is perceived when nerves fire in a specific pattern. Because all nerve endings were thought to be alike, pattern theories proposed pain to be produced by the intense stimulation of non-specific receptors, in a specific spatiotemporal pattern. When a specific pattern was created and transmitted to the brain, pain should be felt. Tissue damage is necessary for the perception of pain according to these theories, yet pain may not be perceived when tissue damage is present, if the pattern of nerve responses is not specific to that of pain.

This theory neglects physiological specifications and any part played by psychological mechanisms (Melzack & Wall, 1965). It still sees the brain as a passive receiver of information rather than as an active component in the pain process (Melzack, 1993). While pattern theory is not applied to chronic pain today, in 1965 it evolved into the gate control theory (Melzack & Wall, 1965). With some modifications, the gate control theory remains basically intact to this day (Melzack, 1993). The gate control theory is discussed below in section 1.7.3.

PSYCHOANALYTIC THEORIES

Psychoanalytic theories suggested that pain was directly related to physical tissue damage, as was the case with sensory/biomedical and pattern theories (Mikail *et al.*, 1994). Jones (1957) suggested that it is hard to imagine or remember pain, but that people can know about it cognitively. Pain cannot be clearly represented or felt at a later stage, as it is repressed. When pain is experienced again, this previously repressed pain increases the current pain felt, leading to a greater pain experience. Jones (1957) suggested that repeated pain provides no immunity to pain. In fact, the opposite may occur, as the previously repressed pain saps resistance.

Pain may be seen as a symptom related to unconscious psychic conflicts (Violon, 1982). More recently psychoanalysts have viewed chronic pain patients as having frustrated dependency needs and a chaotic childhood (Mikail *et al.*, 1994). Their pain response may be due to maladaptive interactions with significant others during their development. The chronic pain patient is thought to have had conflict in relationships and a disordered personality (Roy, Bellissimo, & Tunks, 1982). Merskey and Spear (1967) suggest that guilt, conflict, resentment, depression, and anxiety may be blamed for the development of chronic pain. These symptoms however, are not specific to pain. In addition, many people have these symptoms without experiencing pain.

Freud made a slight adaptation to the biomedical disease theory to account for the difficulty that symptoms sometimes exist where no pathology is found. He suggested that when cause or pathology was absent, the lesion was in fact in the psyche (White, 1990). However, Freud was unclear as to whether psychogenic symptoms differed from those with organic bases (White, 1990).

PSYCHOGENIC PAIN THEORY

Engel (1959), a medical practitioner, led the field of chronic pain by identifying many of the salient factors involved in the development of chronic pain. He argued that there were two components to pain: first, the perception of pain, which is a direct result of the stimulus; and second, the reaction to the pain. This is the psychological interpretation, that is, psychosomatic pain. When pain existed without physical evidence it was called psychogenic. This provided a classification for any pain that did not easily fit the sensation theory (Kugelman, 1997).

Engel (1959) suggested that whilst pain was never neutral in affect tone, it was usually negative, although it could be positive. Engel (1959), writing from a psychoanalytic perspective, suggested that pain acquired special meaning for people. It had a protective role, warning of physical damage to the body, and was involved in interpersonal relationships. This link was created in infancy and childhood, when the child was reinforced by attention and the relief of pain when they cried because of pain. Engel (1959) identified affective and behavioural aspects to chronic pain, although he did not verbalise them in these terms.

According to Engel (1959), pain and punishment have become linked. Pain signals to the individual that they are bad or guilty. Through pain, however, they can be forgiven. Pain may become associated with aggression and power, loss of loved ones, resolving difficulties and with sexual or aggressive feelings. This theory suggests that self-punitive behaviour involving pain is a way of behaving and feeling that is learnt early in life.

Engel (1959) identified some personality factors, which he called “psychogenic pain”, or a “pain-prone” patient. Here, psychic factors play a major role in the development of pain. He defined a “pain-prone” patient as a person who reported pain in the absence of any physical cause, or whose pain was out of proportion to the physical cause. Cultural, situational, psychological, social, and behavioural components influence the person’s experience and expression of pain (White, 1990). In the “pain-prone” patient, the love and warmth experienced as a response to pain becomes a template for later pain and the relationships that revolve around it. Thus, pain becomes a solution for inter- and intrapersonal conflict.

Engel (1959) suggested several characteristics of “pain-prone” patients. They repeatedly and chronically suffer from pain without any associated physiological change. Their painful syndromes first begin in early life. They have a chaotic early family history. Pain, suffering and aggression play a significant role in their family relationships. They may have a long-term background involving guilt. The pain could have been precipitated by a guilt-provoking incident. They are chronically pessimistic, gloomy, and depressed. They see themselves as martyrs who endure their suffering. Pain is seen as punishment for their wrong doings. They solicit the infliction of further pain, for example, by surgery. Presumably, in its extreme, such a person exhibits symptoms of Munchausens syndrome. Munchausens syndrome is a factitious disorder in which a person intentionally produces symptoms of a disorder with the motivation to assume a sick role. External incentives for this behaviour, however, are absent (American Psychiatric Association, 1994; Reber, 1985).

Engel (1959) suggested circumstances under which such episodes of pain occur, namely: when the individual is not satisfied by the amount of suffering currently experienced; in response to loss, real or perceived; when he or she feels guilt, especially when this is due to forbidden thoughts; and with a psychiatric diagnosis of conversion hysteria, depression, hypochondriasis, or schizophrenia.

Thus, at an early stage, Engel identified many of the affective, behavioural, and personality issues in the development of chronic pain. This is likely to have precipitated discussion and research into these areas, which are discussed below, however, Engel's concepts, in this form, are not extensively used today.

RESISTANCE TO HEALTH THEORY

Many psychoanalytic concepts have been incorporated into the theory of resistance to health. One example of this is the principle of secondary gain. This theorises that chronic pain patients may use their pain to gain caring and compassion, or to avoid disliked activities. The individual's desire to be healthy, with the benefits that ensue, are off-set by the advantages of being ill. Schoen (1993) suggested three themes of resistance to health: nurturance, withdrawal, and punishment.

Nurturance occurs when the person receives caring and concern from others due to illness or pain. This attention is justified by being ill. Starting when he or she was a child, the person may only have received attention, nurturance, and support from significant others when they were physically ill. Alternatively, they might feel justified in taking care of themselves and looking after their own needs only when they are ill or in pain. Apart from illness, they do not spend time on their emotional needs. This may create conflict for the person. They may wish to be well, but fear losing the nurturance gained only when ill or in pain. People operating under this nurturance theme do not actively pursue treatment and health.

The withdrawal theme protects the individual from additional hurt, disappointment, or responsibility. This is used when a person experiences serious setbacks, such as relationship problems, job loss, or death of a significant-other. These losses or setbacks may precipitate depression and withdrawal. The illness or pain provides the justification for withdrawal and isolation from the world. The person focuses on the illness or pain and withdraws from the rest of life.

People operating under the punishment theme feel that their illness or pain is deserved, that they are being punished for doing something wrong, or that they are a "bad" person. They do not actively try to get well as they see their pain as what they deserve.

SUMMARY OF HISTORICAL THEORIES

The historical theories presented above may be placed into one of three categories. They may focus almost entirely on the sensory aspect of pain, such as the specificity theory, the unidimensional theory, pattern theory, and the disease-medical theory. Alternatively, they may be generally psychoanalytic in content, such as the psychoanalytic and psychogenic theories. Or they have been derived from psychoanalytic concepts, such as resistance to health, and focus almost entirely on psychosocial concepts.

During the development of theories of pain, researchers discovered that pain, in particular chronic pain, was more complex than a purely sensory theory would suggest. Although psychoanalytic theories attempted to provide an alternative explanation, they lacked in explanatory power and were generally not supported by research and empirical evidence. For example, Roy *et al.* (1982) suggested that historical theories were not productive in leading to treatment that alleviated chronic pain.

Alternatives, which are related empirically to treatments, have been developed. These are presented below.

1.7.2.2 Behavioural and Learning Theories

The historical theories focus almost entirely on physical, psychoanalytical, or psychosocial concepts. Behavioural and learning theories discuss chronic pain in terms of behaviours and how these are learned. They discuss precipitating and maintaining factors related to chronic pain and disability. This section covers the topics of operant conditioning, modelling, classical conditioning, fear avoidance, and psychosocial factors.

OPERANT CONDITIONING THEORY

The operant conditioning theory suggests that an individual experiencing pain through a noxious stimulus desires to withdraw and escape. The frequency of the pain-behaviours is primarily determined by the consequences of this behaviour. The operant conditioning theory does not attempt to explain the initial cause of pain. Rather, it sees chronic pain as a “subjective internal experience” that may be maintained after the initial physical cause is removed (pp. 11). This is because chronic pain behaviours may continue after the initiating physical causes have been removed. That is, psychological factors are treated as secondary reactions to sensory stimulation (Turk, 1996b). This is in contrast to the sensory/ biomedical theories.

Fordyce (1976) proposed an operant or learning theory to explain why pain becomes chronic. He defined chronic pain as a behaviour. Specifically, what becomes chronic in chronic pain is pain-behaviour, suffering, and disability. Instead of looking for and treating underlying pathology, the behaviour or the symptoms should be treated, because these may be occurring due to reinforcement rather than from physical stimuli (Fordyce, 1974b). Pain-behaviours may occur because the person attains positive effects and avoids negative effects, rather than these behaviours being due to the underlying pathology, even if this was initially the case. Fordyce (1978) suggested that acute and chronic pain are very different and therefore require very different treatments. He goes as far as to state that “treatment methods of one may make the other worse” (p. 70).

Fordyce (1976) stated that chronic pain behaviours evolve from acute pain behaviours. This may occur directly through positive reinforcement of the actual pain-behaviours, or indirectly via reinforcement due to avoidance of aversive circumstances or consequences (Roy, 1985). Direct positive consequences (such as, caring and concern, social interaction, medication and compensation) may have become contingent on pain expression or pain-behaviours (Fordyce, 1974b). Escape and avoidance behaviours (sometimes referred to as secondary gain) may have been adaptive initially, when

associated with acute pain. Examples these behaviours include rest and reduction in work, family, or other stressful situations. These may be maladaptively positively reinforced, and continue beyond the normal period of physiological recovery. If avoidance behaviour is successful, then aversive or punishing consequences may never occur. This reinforces the avoidance behaviour and leads to continuing pain (Fordyce, 1974a, 1974b, 1976). Avoidance of activities is related to anxiety about pain. The person expects pain upon activity; that is, there is stimulus generalisation where a person may have maladaptive responses to many stimuli (Turk, 1996b). For example, this may occur if a person fails to go to work for fear of experiencing pain. As long as they avoid work they cannot be proven wrong by discovering that working does not produce additional pain.

The operant conditioning theory focuses on pain-behaviours, particularly those relating to approach, avoidance, and the communicative aspects of pain. Violon (1985) suggests that these pain-behaviours are learnt from a very young age. For example, a baby learns very quickly that pain-behaviour is a good way of getting attention and caring. For someone suffering from chronic pain, reducing symptoms does not automatically lead to health and well-behaviours. Healthy behaviours too may need to be learned (Fordyce, 1978). Positive reinforcements are consequences that increase the likelihood of behaviours. For example, attention from others and avoidance of undesired activities are positive experiences and may help to maintain pain-behaviours. Protective avoidance behaviours are designed to avoid a specific noxious stimulus (in this case pain). These behaviours are maintained by the anticipation of pain. They may continue even after pain has dissipated because, by their nature, they cause the avoidance of pain. If successful, the person may not be able to identify when pain is no longer going to occur without stopping these behaviours. The person does not stop these behaviours, because they fear the anticipated pain. Stimulus generalisation means that the behaviours learned in one situation generalise to other situations in which they have not been specifically learned. In chronic pain patients, the avoidance of activities increases due to similarities with previous pain-causing activities. A cycle is created where a reduction in activities leads to physical deconditioning. Here muscles and other tissues become less able to function effectively or accommodate different activities. In turn, an increasing range of activities cause pain. A further reduction in activities occurs giving rise to further disability and physical deconditioning (Turk, 1996a). Turk, Wack, and Kerns (1985) classified four clusters of pain-behaviours that can be reinforced, namely: distorted ambulation or posture, negative affect, facial/audible expressions of distress, and avoidance of activity.

This theory of chronic pain has been supported by research. Fernandez and McDowell (1995) reported a hyperbolic relationship between pain-behaviours and reinforcement. The reinforcement accounted for 76% to 86% of the variance in pain-behaviours. An inverse relationship occurred between pain and healthy-behaviours (Fernandez & McDowell, 1995). This showed that people demonstrating a high level of pain-behaviours have a low rate of adaptive healthy-behaviours. To decrease pain-behaviours one could either decrease the reinforcement for pain-behaviours, increase the reinforcement for healthy-behaviours, or both. In a prospective study, Gatchel, Polatin, and Mayer (1995) reported compensation and personal injury insurance status to be a predictor of chronic low back pain, in addition to self-reported pain and disability.

Operant conditioning suggests that via positive consequences, or via escaping and avoiding negative consequences, chronic pain-behaviours may continue beyond physical pain. As illustrated, this theory has some support. It is, however, subject to some criticism. Concerns about the operant conditioning theory include the following: the questionable validity of the pain-behaviour construct; the pain-behaviour construct lacks specificity and is over-inclusive; observed behaviours are assumed, rather than proven, to be maladaptive and inappropriate; there are potential detrimental consequences of under-reporting of pain which are not addressed; there is dissatisfaction and a lack of acceptance with treatment; there are problems with maintenance and generalisation of treatment (even when treatment is initially successful); and this theory relies exclusively on motor behaviour and fails to consider subjective, emotional, or cognitive aspects of chronic pain (eg., Turk, 1996b, 1996a). This approach to chronic pain has been criticised as emphasising pain-behaviour rather than emphasising pain itself (Turk, 1996b, 1996a). The focus of this theory is indirect as the pain-behaviours are, at best, a communication of the pain or other distress that the person is experiencing. However, some pain-behaviours do not indicate pain. Treatment difficulties are discussed earlier in this chapter under section 1.6 Chronic Pain Treatment and Effectiveness.

In summary, operant conditioning theories, and learning in general, have added a great deal to the treatment of chronic pain. This has been supported by some research. However, there are still many limitations to this theory. This theory would benefit from integration with other complimentary theories to better account for the development and maintenance of chronic pain and disability.

MODELLING THEORY

This theory suggests that chronic pain-behaviour is learned by modelling (Turk, 1996b). People in chronic pain learn their pain-behaviour by copying the behaviour of others in pain. By modelling, people can learn new behaviour. They watch another person perform the behaviour. This can happen by observation, without the people who are modelling actually being exposed to the stimulus or the consequences. By modelling alone, people can acquire novel behaviour patterns. There is evidence of the immediate and long-term consequences of observing pain in others. This includes behavioural, cognitive, and affective aspects (Craig, 1978). Chronic pain has been observed to run in families. For example, parents of pain-sufferers have been reported to suffer more frequently from pain than parents of people not suffering from pain (Violon, 1985). Significant others may also model pain experience and expression. This modelling can be adaptive or maladaptive (Craig, 1978).

Turkat and Noskin (1983) reported experimental data to support operant learning and modelling theories. Individuals who modelled a person who avoided responsibility when ill, were more likely to avoid responsibility when ill themselves. Yet, many people who do not suffer from chronic pain observe the same models as those who do.

CLASSICAL CONDITIONING THEORY

Flor and Birbaumer (1994) suggest learned muscle tension is another aspect of learning that is associated with pain. People who are presented with events (unconditioned stimulus), which are perceived

to be personally stressful or painful, increased their muscle tension (unconditioned response). The duration of their muscle tension continued after the event. Classical conditioning is thought to be responsible for this. Pain is naturally associated with the response of increased muscle tension, and through classical conditioning of continued pairing of the muscle tension with other stimuli (conditioned stimuli), these stimuli elicit the same response (conditioned response) of muscle tension. The conditioned response to the conditioned stimuli mimics the original pain, although it is unrelated to the initial cause of the pain (Flor & Birbaumer, 1994). Conditioned response (of pain) is felt as indistinguishable from pain produced by unconditioned stimuli. Pain may become chronic if the conditioned stimuli are maintained. In support of this theory, chronic pain patients have been found to habituate less readily to pain than patients without chronic pain (Flor & Birbaumer, 1994).

FEAR AVOIDANCE THEORY

The central concept of the fear avoidance theory is that patients with chronic pain fear pain. They avoid experiencing additional pain by avoiding activities and situations that may elicit it. This is seen as maladaptive when the person fails to identify the activities they can complete without pain (whilst their injury or illness heals). Maladaptive behaviours that this theory attempts to address are as follows: pain-behaviours unaccounted for by physical evidence; very high levels of reported pain; pain lasting over a lengthy period; pain that persists despite medical intervention; and withdrawal from social, vocational, and family activities (Rose, Klenerman, Atchison, & Slade, 1992). A more adaptive strategy is for the person to continually attempt different behaviours, thus balancing physical activity with their pain experience. Re-calibrating activities that they can perform is less likely in the long-term to lead to loss of mobility and functional limitation (Rose *et al.*, 1992). Sternbach (1974a) suggest that stressful situations can influence a person to avoid pain rather than confront it. Rose *et al.* (1992) add factors such as personal experience, pain history, personality, modelling, and conditioning as important moderators of coping strategies.

The fear avoidance theory accounts for reinforcement and learning factors. As a single factor theory, it focuses on the actual behaviours and does not include the emotional or the cognitive aspects of chronic pain (Flor *et al.*, 1990). When exhibiting pain-behaviours, most people will receive care, concern, and reinforcement at some time in their lives, yet not everyone develops chronic pain.

PSYCHOSOCIAL FACTORS

Heaton, Getto, Lehman, Fordyce, Brauer, and Groban (1982) suggest a range of psychosocial factors that may contribute to the onset and maintenance of chronic pain. These are mainly related to learning and reinforcement. They include the following: reinforcement of pain-behaviour; compensation; stress (leading to depression and anxiety); rest; time out from stress, work, and family responsibilities; justification for not achieving goals related to themselves or others; access to medication and the health-care system; social reinforcement from others; and security of the chronic pain patient role. However, Heaton *et al.* (1982) did not discuss in detail how these factors interact. These factors are

supported by clinical and experimental evidence (Heaton *et al.*, 1982). The social-behavioural context is often underestimated. Its role is however, very important in chronic pain (Knotek, Blahrs, & Knotkova, 1997).

SUMMARY OF BEHAVIOURAL AND LEARNING THEORIES

The theories in this section focussed on one cause of chronic pain. They are based on behavioural or learning components, such as learning, classical and operant conditioning, modelling, and fear avoidance theories. Behavioural and learning theories add important information to the area of chronic pain. They acknowledge the person's interaction with the environment and others. These theories suggest methods of treating chronic pain that involve changing reinforcement contingencies. The weakness of these theories is that they are single factor theories and therefore very specific. They do not address the influence of other factors on the development and maintenance of chronic pain. Each theory accounts for only a small number of observations found in the presentation of chronic pain. However, the information they provide is detailed.

1.7.2.3 Cognitive-Based Theories

Cognitive-based theories generally discuss the development and maintenance of chronic pain primarily in terms of thoughts and beliefs. This section discusses cognitive, information processing, and social cognition theories. These theories, in addition to the learning and behavioural theories, provide a theoretical basis for the treatment of chronic pain.

COGNITIVE THEORIES

Cognitive theories suggest that people actively process information in an attempt to understand their pain or illness (Knotek *et al.*, 1997). Pain beliefs during the development of chronic pain involve interpretation of a person's physical pain, and beliefs concerning the future of pain, in conjunction with extended life and increased activities. The behaviour of chronic pain patients, as suggested by cognitive theories, stems directly from this understanding, rather than from the physical stimulation itself (Williams, 1997). Self-schemata (a set of relatively enduring beliefs about how the person sees themselves, others, and the world) are cognitive structures guiding the process of interacting with and managing pain and its consequences. These beliefs may be adaptive or maladaptive. They affect the interpretation of the pain and interactions with others, such as health-professionals. Self-schemata also influence affect and behaviour. Cognitive theories for chronic pain are based on cognitive therapy for emotional disorders, as proposed by (Beck, Rush, Shaw, & Emery, 1979).

Williams (1997) developed a new cognitive theory to address the problems with the existing cognitive and self-regulation theories. According to Williams' (1997) cognitive theory, people are thought to actively process information to understand their pain. Their affect, coping, and behaviour stem from this understanding. For example, misinterpretation of benign physical sensations can result in anxiety about a perceived illness (despite contrary evidence). The affect and behaviour associated with chronic pain are thought to be related to the interpretation of the pain, rather than to the pain

itself (Williams, 1997). This may be related to an individual's beliefs about control and helplessness (Turk & Rudy, 1992). Beliefs concerning health and misinterpretations are considered to be central in the cognitive theory of chronic pain. Distortions and misinterpretations of these beliefs can be maintained by the following selective attention, the avoidance of activity, safety behaviour, reassurance seeking, coping behaviour, and misinterpretation of physical sensations and pain-related information (Williams, 1997).

Williams' (1997) cognitive theory does not aim to completely model chronic pain or dysfunctional illness-behaviour. It suggests cognitions play a major role in some presentations. Williams (1997) suggested chronic pain patients' beliefs about themselves and others, and about pain and illness, are essential and interactive in determining behaviour. Here, self-schema is given a central role, whilst cognitive, affective, and behavioural responses are closely related to this self-schema.

Drawing on Beck *et al.* (1979), Williams (1997) described a belief triad' which gives the illness or injury a unique individualised meaning, which in turn affects a person's behaviour. Beliefs about the illness, and beliefs about the self, the world, and other people, are two of the factors involved. Chronic pain is set in a social context, and thus the individualised underlying schemas will affect their interactions with others. The third factor covers the interaction between the first two factors. Beliefs about self, others, and the world interact with beliefs about chronic pain. The same behaviour may be precipitated or maintained by different schemas and processes in different individuals or at different times. Feedback loops occur at every stage, with each stage influencing the other stages.

Cognitive theories of chronic pain account for the following: non-adherence to treatment; people who have physical symptoms of disease or injury, but no pain-behaviour; and pain-behaviour with no physical symptoms of disease or injury. However, they do not account fully for the development of chronic pain, as they discuss only cognitions (Williams, 1997). Yet, as single factor theories, they are effective in addressing factors that are central in the chronic pain presentation of some individuals.

INFORMATION-PROCESSING THEORIES

There are several specific information-processing theories that specifically address somatoform disorders. In addition, several attentional and affective processes are implicated in the development and maintenance of chronic pain (Duckworth, Iezzi, Adams, & Hale, 1997).

Duckworth *et al.* (1997) presented three information-processing constructs, namely selective attention, impaired stimulus filtering, and affective language difficulties. Selective attention implies that people selectively attend to information suggesting pain (or an injury or an illness). They attend only to information confirming their hypothesis about what they believe is causing their pain. They behave according to their hypothesis (which may or may not be correct). Impaired stimulus filtering is an impaired ability to differentiate between relevant and irrelevant incoming information. People are bombarded with a large range of incoming information (including pain information), and they are unable to identify whether the pain (or any other information) is relevant or not. The affective language deficiency component of information-processing theories suggests that people use bodily symptoms to communicate what is experienced psychologically. It is more specifically a cognitive-perceptual

theory. The use of bodily symptoms (rather than affective language) when in psychological distress has been described in terms of “somatothymia” and “somatothymic language” (Duckworth *et al.*, 1997). This is thought to be influenced by the following: attentional processes; acquisition and use of affective language; current mood; and personality. Individuals may report pain if they are unable to process and express their affect. In support of this theory, depression and anxiety have been found to account for 36.5% of variance in physical symptom report (Duckworth *et al.*, 1997). Despite somatically focussed chronic pain patients showing this information processing style, this style is not attributed to higher emotional distress (Duckworth *et al.*, 1997). Theories of selective attention, monitoring, and misinterpretation of somatic symptoms form part of cognitive-based theories of anxiety disorders (Chambless & Hope, 1996; Clark & Steer, 1996; Salkovskis, 1996).

In a comparison of three of these information-processing theories for chronic pain, Duckworth *et al.* (1997) described evidence supporting only one, namely, that people with chronic pain have impaired stimulus filtering, especially when somatically focussed. These individual may benefit from specific instruction as to which bodily sensations are normal and which should cause concern.

These specific information-processing theories may increase understanding of the development and maintenance of chronic pain. Most, however, lack empirical evidence (Duckworth *et al.*, 1997).

SOCIAL COGNITION THEORIES

Social cognition theories, for example, the health belief model (Becker, P.Haefner, Kasl, P.Kersch, Maiman, & Rosenstock, 1977), to which self regulation theory (Leventhal, Meyer, & Nerenz, 1980) is a recent addition, suggest that people evaluate several factors (particularly costs and benefits) before “deciding” on their behavioural responses to illness and pain. People may first evaluate the seriousness of their illness (or injury), the perceived costs and benefits of treatment, and whether they can carry out the treatment behaviour proposed (Williams, 1997). This theory explains both functional and dysfunctional pain-behaviours (Williams, 1997). Leventhal *et al.* (1980) suggest that health-behaviour is dependent on a person’s understanding of the threats of illness or injury, past beliefs, and their appraisal of health-related information. Leventhal *et al.* (1980) identify five components:

- i. The “identity” of the illness and the symptoms;
- ii. The “time line” (whether the illness is acute, chronic, or recurring);
- iii. The “cause” (their beliefs about the cause);
- iv. The “consequences” (expectations of the illness interfering with their lives);
- v. The “cure” or “control” (the extent to which the illness is seen as being able to be controlled, and how this might occur).

The self-regulation theory suggests two relatively independent processing systems, both affected by previous experiences and cognitions: the ability to cope with; firstly, the difficulties of the illness,

and secondly, the emotional reaction to the illness. Both of these processing systems are influenced by previous knowledge and experiences. There are three stages. First, an illness-representation is formed. This guides the development of a plan of action in the second stage. Third, the effects of the action are evaluated against the person's expectations. This is a dynamic and evolving model. Emotional reactions are seen as prominent in this theory as they can affect illness-behaviour (Leventhal *et al.*, 1980; Leventhal, Diefenbach, & Leventhal, 1992; Williams, 1997).

The self-regulation model creates an understanding of functional and dysfunctional illness-behaviour and emotional reactions. It is applicable across a number of health difficulties, including chronic pain. However, Williams (1997) suggests that the self-regulation theory is inadequate in explaining the development of chronic pain. Firstly, it lacks a description of a feedback loop. Secondly, it suggests that the role of beliefs about the self and others is not essential, and therefore neglects all but illness-related beliefs. Thirdly, it uses two largely separate processing systems. One deals with problems of the illness and the other one deals with the problems of the emotional reactions. Williams (1997) showed that these models only accounted for about 25% of variance in health-behaviour. He attempted to address these difficulties using the cognitive theory (as discussed above in this section).

SUMMARY OF COGNITIVE-BASED THEORIES

Three specific types of cognitive-based theories are presented in this section. The first is based on specifically cognitive factors. The second is based on information processing, and the third comprises social cognition theories.

Cognitive-based theories present information that is important in understanding the development and maintenance of chronic pain and disability. They explore how people may analyse and think about their situation, including how this might influence their pain-related thoughts, feelings, and behaviours. These theories suggest methods of treating chronic pain, by changing how chronic pain patients think about and appraise their situations. Their weakness is that they are single factor theories and therefore very specific. They do not address the influence of other factors on the development and maintenance of chronic pain. Each theory accounts for only a small number of the range of observations found in the presentation of chronic pain. However, these theories provide in-depth information about their specific field. These cognitive-based theories, in addition to the behavioural and learning theories, are related to psychological processes and are capable of development, further empirical confirmation, and greater integration.

1.7.2.4 Family, Contextual, and Psychiatric Theories

This section presents further single factor theories which include the following family environment theory, systems perspective theories, social and communicative theories, sociogenic theory, attachment theory, and psychiatric theories.

FAMILY ENVIRONMENT THEORY

Violon (1985) reported that pain becomes chronic due to the family environment. She suggested that the family had an aetiological role in chronic pain, together with a role in its maintenance. Chronic pain in an individual impacts on the functioning of the rest of the family (Flor, Turk, & Rudy, 1987b). This feeds back to the individual suffering from chronic pain. It has been suggested that the aetiological process is due to the person with pain having had hostile parents and a miserable childhood (Violon, 1985). Parents of chronic pain patients also often suffer from pain. Therefore, children learn pain-behaviours as a way of coping (Violon, 1985). This is consistent with the modelling theory presented under behavioural and learning theories in section 1.7.2.2.

Walco and Dampier (1987) promoted the idea that recurrent pain is caused by unresolved developmental conflicts. These people feel victimised, lack control and mastery over their lives. Violon (1985) postulated that families of chronic pain-sufferers have trouble dealing with, and expressing emotional problems. She also maintained that they cannot differentiate emotional from physical complaints. Therefore, chronic pain patients misname emotional problems as physical problems. These alexithymic tendencies have been previously discussed as an affect language deficiency under cognitive-based theories in section 1.7.2.3. Violon (1985) suggests that chronic pain patients acquire status and other secondary gains within their families and communities due to their roles as victims. A positive relationship exists between the number of pain models in the family and the current pain and disability experienced. As children, individuals develop attitudes about health and illness and learn interpretations of symptoms and responses to illness and injury. These attitudes are derived from their parents and significant others (Turk, 1996b). Modelling is involved in a large proportion of this learning. Modelling is discussed above under behavioural and learning theories in section 1.7.2.2.

Violon (1985) is critical of purely learning theories, as everybody at some stage in their life will have received reinforcement for pain-behaviours. Such reinforcement occurs from a very young age when children receive care and attention when they cry. The family environment theory appears to suffer from the same difficulties, in that many people are exposed to models of pain-behaviour yet only some develop chronic pain.

Given a possible association of early experience with chronic pain, researchers have studied the effects of early experience and genetics on the development of chronic pain in animals, including humans. In dogs, early painful experiences influence the avoidance of harmful situations and objects (Melzack & Scott, 1957). Early experiences affect animals' coping strategies when presented with a painful situation. Those with only pleasant early experiences displayed maladaptive and disorganised behaviour when later presented with painful or harmful situations. They lacked an understanding of pain and threat, as well as the emotional experience to perceive pain normally, and to react appropriately (Melzack & Scott, 1957). In humans, early experience (especially reinforcement for illness) has been found to affect chronic pain-behaviours (Whitehead, Winget, Fedoravicius, Wooley, & Blackwell, 1982).

In summary, individuals' early painful experiences and responses, may be an important contributory factor in their developing chronic pain later in their lives. In addition, how these people cognitively,

behaviourally, and emotionally manage their chronic pain is affected by these experiences.

SYSTEMS PERSPECTIVE THEORIES

Most of the theories presented above focus entirely, or almost entirely, on the chronic pain patient with little emphasis on significant others, such as their family. The theories that do discuss significant others focus entirely on the early family environment or on reinforcement contingencies. These systems perspective theories use similar cognitive and behavioural constructs and mechanisms as already discussed, but differ in the emphasis placed on the family or significant others. A different level of analysis of similar constructs is used. The family is thought to have a direct causal role in the development and maintenance of chronic pain.

Rowat (1985) discusses one such theory, the etiological theory'. Although the central concern of the etiological theory remains the patient, the family is deemed to be useful in assessing the aetiology of the pain. This theory assumes that the family provides an essential role in the care of the patient, and this may influence the maintenance and outcome of chronic pain. It is thought that pain-behaviours are learned and that this partly occurs by modelling within the family. This differs from the truly interactive theory' that Rowat (1985) discusses, where the family is seen not only as influencing the patient and their pain, but the family are also personally affected by the pain (Rowat, 1985). From this perspective, the chronic pain patient is seen as part of a fully interactive system.

Rowat (1985) summarises characteristics of families experiencing chronic pain as showing a high level of marital maladjustment, and in which attention and interaction reward pain-behaviours. The way the family and the patient react to, and cope with, the pain problem is mediated as follows: the way in which the family sees the injury or illness; the physical and psychological health of the rest of the family; the role the person has played in the family; and their role after their pain problem. The factors reducing pain often go unrecognised by the family, therefore, the family does not know how to best help the pain patient. This leaves the family feeling helpless, as their previously useful coping skills are rendered ineffective. This has a rebound effect on all family members, including the chronic pain-sufferer.

In summary, from the systems perspective viewpoint, the family can be seen to be involved in predisposing, precipitating, and maintaining chronic pain and disability in a member of their family. A family member suffering from chronic pain may in turn affect the family.

SOCIAL AND COMMUNICATIVE THEORIES

Social and communicative theories focus on the individual's current situation. They address characteristics and consequences of behaviour, including pain-behaviour, and the role behaviour may play when interacting with others (Roy *et al.*, 1982). The strategic approach' is one of these theories. It suggests that all behaviour serves as communication about interpersonal problems, and that symptoms of pain are expressions of interpersonal conflict (Roy, 1985). Pain not only warns of danger or threat from injury, but also sends a message, requesting help from others. The help needed may be for a physical disorder, or some other need (Szasz, 1955). The help request may be in the form of

verbal complaints, non-language sounds (such as moans or groans), body posture, and behaviour, or in the form of limitations of activities (Fordyce, 1976). This communication occurs within health-professional-patient relationships, within the family, and with friends.

Sternbach (1974b) perceived chronic pain patients to play “pain games”; where patients see themselves as invalids, and try to maintain the image of suffering. Berne (1977) has written a book outlining the games people play, although this is not specifically related to pain. Other needs may be met by the assumption of the role of a chronic pain patient. These include obtaining caring, medication, and financial compensation (Sternbach, 1974b). Patients use their pain experience for their own gain. They may attempt to relay the message that they feel unfairly treated, unloved, abandoned, or punished (Szasz, 1955).

The structural approach suggests that pain disorders are related to family dynamics. Family dynamics are thought to play a role in the development and maintenance of pain, similar to other psychosomatic disorders. Families of chronic pain patients are shown to be enmeshed, overinvolved, dependent, and overprotective. Chronic pain patients lack in communication and emotional regulation skills, and avoid conflict and intimacy (Flor *et al.*, 1987b; Roy, 1985). Yet, the person with pain may play an important role of providing stability, or homeostasis, to the family unit. Consequently, the pain-behaviour is reinforced and maintained for the benefit of the family unit (Roy, 1985).

Psychological and familial variables may account for a large proportion of the variance in pain-intensity and disability (Flor *et al.*, 1987b). It is, therefore, important to identify how the family views the cause of the chronic pain, and how they try to influence it. The role that chronic pain-behaviour plays in maintaining homeostasis within the family needs to be identified. This is because families of chronic pain patients tend to deal with emotional problems in a physical way. There are often high levels of family dysfunction. The structural approach suggests that it may be the family or the dyadic relationship that needs treatment, not necessarily the patient’s presenting pain problem (Flor *et al.*, 1987b).

The role that pain plays is far larger than purely a physical or individual one. It includes communication and family dynamics. The following sociogenic theory expands these dynamics further to examine some sociocultural aspects and influences on chronic pain.

SOCIOGENIC THEORY

The sociogenic theory focuses on the sociocultural aspects and their consequences in individuals with chronic pain. The cultural background influences pain perception, labelling, responses, and communication about pain. The type of treatment received, from whom, and the nature of the patient-health-professional relationship is also affected. It further contributes to how significant others, social groups, and communities respond to an individual’s pain (Turk, 1996b). Peyrot *et al.* (1993) postulates that there are generally few cultural norms by which to measure responses to chronic pain. This suggests that people will have difficulty making sense of their chronic pain from a social viewpoint. This particularly occurs when there is no definite diagnosis or identifiable cause of chronic pain, and therefore fewer norms with which to compare it. Chronic pain-sufferers may consequently become

anxious, depressed, and feel pressured to defend their pain-behaviour because their experience is not validated by social norms. Peyrot *et al.* (1993) reported that their experimental data was consistent with this theory. However, they also suggested a biopsychosocial theory may better account for responses to chronic pain found in their data. This is because the biopsychosocial theory includes sociocultural factors in addition to other influences (sociocultural factors are discussed in further detail in section 1.7.3 on Comprehensive or Multifactorial Theories). As a single factor theory, the sociogenic theory contributes important components that are not considered by many other theories. However, it needs to be integrated with other theories.

ATTACHMENT THEORY

The attachment theory, in its current form, examines just one specific aspect that may influence the development and maintenance of chronic pain. It is similar to some of the theories presented above focusing on the chronic pain patient's early environment. It further develops these ideas by linking them to the well-known construct in psychological theory of attachment.

Attachment refers to an individual's tendency to seek closeness to specific people and to feel more secure when they are around. The attachment process is first active between infants and their mothers or caregivers. The attachment process occurs in many different animals, not just humans. There are early, unlearned responses, for example, to make noises that the caregiver responds to, and to go to their caregiver when frightened. Attachment is adaptive in that it reduces the likelihood of young being lost or moving too far from care. The attachment figure provides a secure base from which infants can explore, and provides the basis for interpersonal relationships (Atkinson, Atkinson, Smith, & Hilgard, 1987).

A myriad of studies have investigated the nature of attachment. They have primarily focussed on interpersonal relationships, such as intimate relationships, support seeking, emotional regulation, work performance, and health and well-being (Brennan & Shaver, 1995; Collins & Read, 1990; Feeney & Ryan, 1994; Hazen & Shaver, 1990, 1994; Kobak & Hazen, 1991; Kobak & Sceery, 1988; Mikulincer & Florian, 1998; Simpson, 1990; Simpson, Rholes, & Nelligan, 1992).

An attachment theory suggested by Mikail *et al.* (1994) proposed that pain is a threat to an individual and a warning signal; therefore it is governed by the principles of attachment. This theory states that how a person manages their pain and whether they develop chronic pain depends on their attachment style. The attachment styles used in Mikail *et al.* (1994) research are secure, dismissing, preoccupied, and fearful, as suggested by Bartholomew and Horowitz (1991).

Mikail *et al.* (1994) suggested that after tissue damage, people with different attachment styles respond differently to the threat of pain. As a result, they have different outcomes. Securely attached people have a low probability of developing chronic pain or of having pain disrupt their lives. These people tend to seek out others at times of distress. They are likely to seek help from health-professionals and their support network at an early stage. Securely attached people readily self-disclose and are open and effective in their communication. As a result, they are able to successfully communicate multiple aspects of their pain. Because they have a positive view of themselves

and others, they expect that these people will be able to help them; therefore, they respond favourably to treatment. Consequently, the probability of major life-disruption is greatly decreased. Mikail *et al.* (1994) suggest that chronic pain may develop in these people as a result of a disorganised or slowly responding health-system. However, even if this is the case, these patients are likely to respond well to treatment, particularly long-term self-management.

By comparison, dismissingly attached people are reluctant to seek help because they respond to threat by avoiding caretaking people. They view themselves as self-sufficient and others as untrustworthy, unreliable, and unresponsive. They do not tend to discuss their pain with significant others, or seek help from health-professionals. If they do reluctantly seek health-professional help, they are likely to dismiss their symptoms and minimise the effect of the pain on their lives. They are likely to be externally focussed and blame others. Consequently they may be perceived as hostile. This is because they have a positive view of themselves but a negative view of others. Therefore, their relationship with health-professionals is likely to be superficial. They are also likely to consult many different health-professionals. When they do present, they may be seen as either coping well or appear in need, but they do not comply with treatment. Because they are unlikely to comply with treatment they are unlikely to benefit from it. Therefore, dismissingly attached people are more likely to suffer from chronic pain than securely attached people.

Fearfully attached people also avoid, and delay, seeking help when they have pain. This is because they see themselves as unworthy and they do not trust others. As a result, they are likely to approach interpersonal interactions with anxiety and hostility and withdraw when distressed. Because fearfully attached people delay in seeking help, there are often increased adverse changes and consequences because of their extended period of being in pain without seeking help. These changes (for example, postural changes) may intensify their initial pain and other symptoms. When they do seek help they are helpless, hopeless, distressed, and desperate. Health-professionals may find this frustrating and overwhelming. As a result, the health-professional is more likely to attribute their symptoms to psychological factors. This may be interpreted by the patient as the health-professional not believing that they are in pain. The patient may feel rejected, thus confirming their negative view of themselves and others. Consequently, their treatment response is poor and they are likely to suffer from chronic pain. With traditional treatment their progress is poor. This may be because of their negative and punishing view of themselves and their belief that they deserve to suffer. As a result, health-professionals often become frustrated dealing with a hostile and non-responsive patient and may refer them onwards, thus increasing the patient's feelings of rejection and abandonment and their belief that others cannot help them. As a result, their chronic pain continues.

A person with a preoccupied attachment style is also likely to suffer from chronic pain, which is likely to cause them major life disruption. This is because people with a preoccupied attachment style tend to oscillate between seeking help and withdrawing to prevent rejection. They desperately want help, and have an intense need to be believed and not rejected. Therefore, they attempt to elicit help by being very symptom-focussed. They tend to be self-blaming and self-deprecating and idolise health-professionals. Initially they are very eager to please, very compliant with treatment, and

seem to make good progress. However, when the preoccupied person's ambivalence increases, they may challenge or reject the health-professional's treatment suggestions. They may actually sabotage treatment. They may feel that the treatment is not specific to them and may feel rejected. They may consult many health-professionals, but do not stay with any one long enough for the treatment to be of much benefit.

Mikail *et al.*'s (1994) theory has not yet been tested and it seems unlikely that attachment theory will account solely for why a person may, or may not, develop chronic pain, especially considering the fact that many researchers have found other variables to be important. However, this theory is a useful single factor theory and may help to organise and integrate the other constructs researchers have discussed, evolving into a comprehensive theory if it were extended in this way.

PSYCHIATRIC THEORIES

Chronic pain has been considered as a form of depression, or related strongly to depression and anxiety. Duckworth *et al.* (1997) found that depression and anxiety accounted for 36.5% of their variance in physical symptom report. Conversely, Gatchel *et al.* (1995) showed that neither depression, substance abuse, nor any other kind of major psychopathology, contributed to the onset of pain. This is despite the documentation that major psychopathology co-occurs with chronic pain (White *et al.*, 1997). Gatchel *et al.* (1995) reported that elevated scores on the Hysteria scale (of the Minnesota Multiphasic Personality Inventory) related to greater chronicity of lower back pain. This suggests that those with chronic pain and symptoms of hysteria may have a less favourable treatment outcome. An alternative interpretation of this data is that treatment of the chronic pain in these people will not result in a cure, because the underlying problem (the hysteria) is not targeted.

There is much controversy about the role depression plays in chronic pain (Romano & Turner, 1985). It is well known that chronic pain and depression are related. The controversy is about the way in which they are related. Most chronic pain patients have some symptoms of depression and there is some evidence that pain and depression may coexist as an end point of chronic pain (Pilowsky, Chapman, & Bonica, 1977; Romano & Turner, 1985). Chronic pain patients have been found to have more depression than the normal population. However it appears that chronic pain leads to depression rather than depression leading to chronic pain (Almay, 1987).

Atkinson *et al.* (1991) suggests that although psychiatric disorders and chronic pain do co-occur with remarkable regularity, this does not indicate that chronic pain is merely a subset of a depressive or anxious disorder. This area requires further research, perhaps using a longitudinal rather than cross-sectional research design to access information about the sequence of pain relative to the development of a psychiatric disorder.

SUMMARY OF FAMILY, CONTEXTUAL, AND PSYCHIATRIC THEORIES

The family theories include specific learning and modelling constructs, with an emphasis on vulnerability factors and the importance of the family context in chronic pain patients. These theories tend to emphasise previous learning that has occurred which predisposes the person to develop chronic

pain. They also propose that learning and other family factors may help maintain chronic pain. This vulnerability occurs partially through learning about the positive social components that result from displaying chronic pain-behaviours. These theories do acknowledge, as do other learning and behavioural theories, the presence of an interaction between the person experiencing chronic pain and that person's environment and social contacts. However, in these theories this aspect is more pronounced and afforded more importance than most other theories of chronic pain and disability.

Many contextual factors have been identified as important to the development of chronic pain and disability. These cover a broad range of factors ranging from individual through to cultural factors, and include the interaction between all of these.

The attachment theory of chronic pain encompasses a wide range of factors under one construct, in particular, examining an individual's beliefs about themselves and others and their interactions with others and the world. The theory fits readily with other family and contextual theories. It predicts certain behaviours based on a person's attachment style. This construct, in turn, is based on that person's early experiences interacting with others. These early experiences are also thought to shape their later experiences, including their experience of chronic pain. So, although this theory has not specifically integrated a wide range of constructs related to the development, maintenance and treatment of chronic pain and disability, it has great potential to do so. While this theory does not address the specific mechanisms involved, it is powerful as a single factor theory. It could potentially be usefully integrated with other theories to form a multifactorial theory, or expanded and researched at a different level and developed into a micro theory.

Psychiatric theories may provide a pseudo-explanation for chronic pain, as they deny its presence as an entity in its own right. Such theories suggest that chronic pain is merely an extension of neurotic disorder. If this were the case, which is presently largely unsubstantiated, the person would need to be treated for their psychiatric disorder, at least primarily, in order to demonstrate substantial improvement in their chronic pain. For people whose psychiatric difficulties appear to be a substantial factor in their presentation of chronic pain and disability, these difficulties need to be identified and addressed.

1.7.2.5 Biological Theories

Biological theories focus singularly on the biological basis of chronic pain, often to the exclusion of other factors. There are many biological theories. The theories outlined below include: altered pain regulatory systems theory; and genetic and nerve damage theories.

ALTERED PAIN REGULATORY SYSTEMS THEORY

Bruehl, McCubbin, and Harden (1999) presented a biological theory of chronic pain suggesting increased pain sensitivity amongst chronic pain-sufferers. Their theory was speculative rather than directly derived from data, and suggested a progressive dysfunctional relationship exists between pain sensitivity and resting blood pressure. They suggested endogenous opioids were the primary regulatory process in mediating pain-levels, although they did suggest non-opioid mechanisms were

also involved. In “normally functioning” individuals, a homeostatic system, regulated by endogenous opioids, raises blood pressure in response to pain-levels. This serves to decrease both acute and chronic pain sensitivity. For chronic pain-sufferers, it is suggested that this regulatory system is dysfunctional, in that elevated blood pressure does not cause reduced pain sensitivity for these people. This claim has been supported by experimental evidence (Bruehl *et al.*, 1999). Bruehl *et al.* (1999) theory identifies mechanisms, and has implications for, the treatment of chronic pain. These include psychological treatments, such as exercise and relaxation, which may help to normalise or reverse this dysfunction and thus reduce chronic pain. The authors also suggested that some medication may further disrupt this dysregulation, thereby providing possible reasons for why medication is often not effective for treating chronic pain, especially longer-term.

This theory may also explain some “biological” reasons for the effectiveness of some “psychological” treatment. It may help reduce the Cartesian mind-body distinctions, which appear particularly unhelpful in the chronic pain area. Biological and psychological systems seem to be integrated without this dualism (Bruehl *et al.*, 1999). Traditionally identified biological and psychological treatments and processes are indistinguishable at some levels; both types of mechanisms are based in the same integrated systems.

Schofield and Davis (1998) suggest a different theory based on altered pain-regulation systems. They suggested that pain might result in a restriction of sensory input due to isolation and reduction in activities. This sensory restriction (which they distinguish from complete deprivation) biologically affects the senses, for the stimulation remains unchanged. This sensory restriction affects the pain experience, increasing perceived pain and leading to chronic pain. Thus, use of the senses is encouraged in treatment for chronic pain. This theory may help explain why treatments involving the stimulation of the senses, such as distraction and massage, are effective in treating chronic pain, through a lessening of this biological impact.

GENETIC AND NERVE DAMAGE THEORIES

Inbal, Devor, Tuchendler, and Liebllich (1980), using non-human subjects (rats), examined the effect of genetics on the experience of pain in animals with nerve injuries. This research has important implications in the examination of nerve injury in humans, which can result in chronic pain. The authors reported that identical nerve injuries in rats often produced very different outcomes and suggested that this difference may have a genetic basis. They also suggested that if pain occurs with a nerve injury once, even if the nerve is re-cut, thus removing the damaged part of the nerve, the nerve pain usually reoccurs. These findings may have implications for humans who undergo surgery in an attempt to reduce chronic pain. Simply cutting a nerve that was transmitting a painful signal may not stop the nerve transmitting pain.

Inbal *et al.* (1980) concluded that the inclination to self-mutilate in rats was genetically determined, and related to the presence of neuromas, although this inclination was also moderated by the gender and age of the animal with young males showing an increased tendency to self-mutilate. The genetic difference in the rats was very subtle, showing no humanly perceivable outward characteristics. This

may help to explain why some people repeatedly suffer from injury related chronic pain while others do not (Inbal *et al.*, 1980). Some people may be more genetically susceptible to developing neuromas than others. Neuromas can result in chronic pain. A “normal” neuron does not have the capacity to produce a sustained discharge; this is termed “accommodation”. However, when a neuroma is formed, the neuron loses its accommodation and it is therefore able to sustain continued impulse generation, which the brain may perceive as chronic pain (Devor, Inbal, & Govrin-Lippmann, 1982). This genetic and nerve damage theory can biologically explain why chronic pain is perceived, even when severed nerves remove the initial damaged source. It explains, in part, the maintenance of pain beyond what would be expected given what is known about physical neural pathways.

SUMMARY OF BIOLOGICAL THEORIES

Biological theories provide a good theoretical basis for the development and maintenance of chronic pain. They are generally supported by empirical data. However, these explanations only consider a single level, involving biological mechanisms and biochemistry. They are effective as single factor theories and provide a good basis for integration into multifactorial theories. Indeed, the gate control theory, discussed below in section 1.7.3, takes steps in this direction, integrating some of these biological factors into an effective multifactorial theory.

1.7.3 COMPREHENSIVE OR MULTIFACTORIAL THEORIES

Comprehensive or multifactorial theories often involve integration of the concepts included in single factor theories. The multifactorial theories presented are gate control theory, cognitive-behavioural theory, psychobiological theory, biopsychosocial theory, socio-ecological theory, multidimensional theory, and diathesis-stress theory.

GATE CONTROL THEORY

Melzack and Wall (1965) viewed pain as a physiological process. This led them to propose the gate control theory for chronic pain. This theory has also provided a physiological basis for the role of psychological factors in chronic pain (Turk, 1996a), thus, integrating two parts of the “system” which have previously been separated, to produce the final endpoint, namely, the perception of pain. In summary, the theory suggested that a “gate” modulates input from sensory nerves before it is processed by the brain (Jeans & Melzack, 1992). Melzack and Wall (1965) suggests that this gate exists in the spinal cord. The gate can be acted upon by both excitatory and inhibitory mechanisms, which respectively increase or decrease the likelihood of an impulse being transmitted. Since the 1970’s the gate control theory has been the major theory presented in virtually every textbook in this area. There has also been an explosion of research guided by this theory since its original publication in 1965 (Melzack, 1993).

The gate control theory proposes that motivational-affective, sensory-discriminative and cognitive-evaluative dimensions affect the perception of peripheral stimulation. This occurs when information about an injury is transmitted to the central nervous system by the peripheral nerves via a gate. It is

proposed that the substantia gelatinosa in the dorsal horn of the spinal cord is the location of the gate. The gate activates selective brain processes, which are dependant on temporal and spatial summation of impulses arriving at the T-cells of the substantia gelatinosa (Melzack & Wall, 1965).

Information about the injury is transmitted to the central nervous system by the peripheral nerves via small diameter fibres. The cells of the gate are excited by these signals and can be facilitated or inhibited by other peripheral nerves. Downward control from the brain also regulates the excitability of these cells. Therefore, the brain receives messages that are influenced initially by injury signals. Then, it receives signals from other types of peripheral nerves, which contain information about the stimulus. Thereafter, descending control from the brain reflecting central processes, such as attention, emotion, and previous experience, moderates the sensitivity of the cells. As a result, the brain is considered to be an active system, which attends to, selects and modulates incoming information. Thus, there is "top down" as well as "bottom up" influences on pain. The perception of pain, through the firing of the T cell, which is part of the substantia gelatinosa in the spinal cord, is transmitted to the brain only if the summation at this gate exceeds a critical level (Kugelmann, 1997; Melzack, 1993; Melzack & Wall, 1965; Wall, 1978). The comparison of inputs from both the central and the sensory systems determine the presence or absence of pain.

Large diameter fibres carry these other peripheral and central influences, which inhibit firing of the cells in the substantia gelatinosa. Three factors affect whether a cell in the substantia gelatinosa will reach a critical level of excitation and fire, sending an impulse to the brain. These are first, the cell's activity preceding the stimulus; second, the stimulus activity; and third, the ratio of activity in the large versus small fibres. The difference in the ratio of large and small fibres occurs as large fibres decrease presynaptic excitation, whereas small fibres increase presynaptic excitation of the substantia gelatinosa or gate.

The interaction of these two types of fibres indicates that a person may experience spontaneous pain when the small fibres are spontaneously active, keeping the gate open. Normally this does not occur because the large fibres are also active, providing an inhibiting action preventing summation from occurring. This implies that with an absence of large fibres, or activity in these fibres, there should be constant pain and any stimulus would cause pain, whereas, with an absence of small fibres, or activity in these fibres, there should be no pain. Unfortunately, empirical evidence does not support this view (Nathan, 1976).

Psychological influences, which were previously thought to be only reactions to chronic pain, are now considered to be an integral part of the pain process. These are now incorporated into the theory and treatment of chronic pain (Melzack, 1993). The gate control theory integrated physiological and psychological aspects of pain. Pain was seen to be less of a signal and more of a process with a holistic focus (Kugelmann, 1997). The gate control theory undermined the dualistic mind-body distinction and removed the requirement to distinguish between organic and psychogenic pain. Further, it allowed many different types of treatment, including cognitive-behavioural and self-management techniques. The responsibility for pain management shifted from medical pain-control to a relationship between the health-professional and the patient. This involved a greater personal responsibility

by the patient for pain management. Correspondingly, the aim of pain treatment changed from curing pain to managing pain (Kugelmann, 1997).

The gate control theory can account for many of the pain phenomena that other theories fail to accommodate. It explains why a person may perceive pain with a gentle pressure. This may be because of the lack of activity of the large fibres. It also accounts for people who do not experience pain when it may be expected. The theory suggests that this may be due to the absence or lack of excitation of small fibres. Gate control theory can also account for spontaneous pain. This is attributed to spontaneous activity by the small fibres keeping the gate open, allowing small levels of random neural activity to induce the perception of pain (Melzack & Wall, 1965). Radiation of pain can be explained in terms of the prolonged excitation of small fibres exciting more than one gate cell (Jeans & Melzack, 1992).

Gate control theory explains how attention, emotion, previous experience, and other psychological input can influence the sensory input to modulate perceived pain. These factors can be global central activities such as anxiety or excitement, which may influence gates for the whole body or more selective inputs which influence localised gate activity (Melzack & Wall, 1965). The theory suggests that the nerve system can become sensitized. Prolonged or repeated noxious stimuli provide for a decreased nerve threshold, increasing the likelihood of the nerve firing and the brain registering pain (Wall, 1978).

More recently, Melzack (1993) suggested an adaptation of the original gate control theory (Melzack & Wall, 1965). This better accounted for recent research findings than the initial theory. The revised gate control theory increased the focus of the role of the brain in modulating pain. It is known that the brain is active in influencing the perception of pain. The brain itself can produce an experience that is indistinguishable from a physical pain response. Recent research has shown that the areas of the brain involved in pain perception are extensive (Melzack, 1993). Although pain is usually activated by bodily inputs, it can also be activated without external factors. Melzack (1993) concluded that stimuli trigger patterns in the brain, but do not produce them. He suggested that patterns in the brain are primarily genetically specified, although learning may alter them. Melzack labelled these patterns a "neurosignature". They are produced by repeated patterns of nerve impulses passing through a complex system of nerves called a "neuromatrix". The neurosignature is not purely sensory, but has multiple dimensions, including affective, cognitive, and behavioural dimensions. The neuromatrix and neurosignature are constantly used because they have constant sources of input. These in turn provides a constant stream of behaviour, after the brain has addressed the input. The input and output occur in parallel (Melzack, 1993). This revised gate control theory better explains unusual pain, such as phantom limb pain, through the patterns in the brain, and so better explains the available research findings.

In summary, the gate control theory accounts for factors above and beyond actual tissue damage. It has proven to be very useful as a psychophysiological theory, and is still being used today. The theory includes sensory-discriminative, motivational-affective, and cognitive-evaluative dimensions, as well as providing a physiological mechanism that allows these influences to take place.

COGNITIVE-BEHAVIOURAL THEORY

Cognitive-behavioural theory emphasises thoughts and feelings and the impact these have on behaviour. It acknowledges the effect of the environment. This theory shares many of the ideas and constructs discussed separately under Cognitive-based and Behavioural and Learning Theories in sections 1.7.2.2 and 1.7.2.3. People respond in medical situations based on their illness schemas. These may vary in elaboration and complexity. These schemas provide the basis for pain management, adjustment, and coping (Turk, 1996a). A chronic pain patient's sense of control and ability to manage pain is influenced by their expectations of their pain and their ability to cope with it. Their pain management is affected by their appraisals of their social supports, the health-system, and employment status. These factors affect how they present to others, their communication with regards to their pain, and their adherence to treatment (Turk, 1996a).

Cognitive-behavioural theory proposes that maladaptive cognitive processes may affect a person's experience of pain and suffering. While biomedical factors may initially have a large influence on pain, their role decreases with time. Secondary biomedical difficulties associated with physical deconditioning may exacerbate or maintain the pain. A lack of activity leads to preoccupation with the pain and physical symptoms (hypersensitivity to introspection-derived stimuli). An environment of reduced activity, and fear of injury, pain, and loss, can support the pain role, impeding successful pain management and rehabilitation. Attentional changes increase the likelihood of the chronic pain patients misinterpreting and overemphasising symptoms and seeing themselves as disabled (Turk, 1996a).

It has been suggested that chronic pain patients have negative expectations of their ability to do things without experiencing pain and that they believe that they have little control over their pain (Flor *et al.*, 1990; Mikail *et al.*, 1994; Schmidt, 1985). Pain often has a negative effect; it can cause fatigue, physical deconditioning, isolation, loss of employment, and a decrease in activity. These negative effects can lead to cognitive and affective changes such as: a loss of self-esteem, depression, self-absorption, and an increase in symptom monitoring. These cognitive, affective, and behavioural changes make the person more pain-orientated. Because pain can be influenced by attention, anxiety, suggestion, prior conditioning, and other contextual and cognitive variables, a vicious cycle can be set up (Mikail *et al.*, 1994; Roy *et al.*, 1982).

People with chronic pain actively process information, including information about their pain. They can have negative maladaptive thoughts, and feel helpless and unable to control their pain. These thoughts and feelings lead to decreased activity and an increased over-reaction to sensory information. This, in turn, leads to reduced effort and activity, and increased distress. Turk (1996b) stated that the specific thoughts and feelings that patients experience prior to, during, and following a pain episode could greatly influence their experience of pain and subsequent pain episodes. These specific thoughts often concern the controllability of pain, the person's evaluation of their coping resources, their expectations regarding the outcome of different strategies, and erroneous beliefs about their pain and disability (Turk, 1996a).

The cognitive-behavioural theory suggests that cognitive interpretations of events affect behaviour

and emotions. Therefore, if during chronic pain, an experience of pain is interpreted as being indicative of tissue damage, the behaviour that results is likely to be less adaptive, with greater disability and more suffering. Certain beliefs may lead more readily to maladaptive functioning. For example, believing that the pain is going to continue regardless, is likely to lead to passive coping strategies rather than active cognitive or behavioural coping strategies. Those who think that their pain is a mystery may believe that they are unable to change their pain and therefore they will not attempt to manage their pain. Cognitions can also influence mood and indirectly affect coping strategies. A frequently stated rationale for avoidance of exercise was anticipation of increased pain. This led to a vicious cycle of helplessness and physical deconditioning. Continued avoidance of activities does not allow for disconfirmation of the belief that activities are painful. Therefore the person's predictions will not be corrected.

Chronic pain patients tend to believe that they have very little control over their pain. Increased disability is likely with a schema that takes disability to be an inevitable aspect of pain (Turk, 1996a). The effect of disability schemas have been empirically demonstrated, with research indicating that a person's disability had more to do with their beliefs about pain and disability than disease severity. People who rated information given by health-professionals as applicable to themselves had more positive treatment outcomes (Slater, Hall, Atkinson, & Garfin, 1991).

The psychological aspect most relevant to cognitive-behavioural treatment effectiveness is the person's ability and willingness to accept a cognitive-behavioural theory of chronic pain. The cognitive-behavioural approach requires a shift in people's beliefs from helplessness and passivity to resourcefulness and ability to function despite their pain (Schwartz, DeGood, & Shutt, 1985). This in turn may require a shift from adherence of solely biomedically-based theories to more holistic ones. Researchers have demonstrated that treatment successes are related to changes in thought patterns. In particular, people showing a reduction in negative, and an increase in positive, appraisals showed a significant shift in beliefs during treatment. Those people showing the greatest shift in beliefs reported the greatest reduction in pain. Complaints of intense pain were associated with negative appraisals (Turk, 1996a). Negative thoughts predicted pain and disability, together with visits to health-professionals (Newton & Barbaree, 1987). Thus, it is essential for chronic pain patients to develop adaptive beliefs regarding their pain, suffering, and disability. Despite this, changes in thought patterns have not always been found to cause changes in activity, medication use, employment, coping, or further treatment (Flor, Fydrich, & Turk, 1992).

Self-efficacy refers to the beliefs that people have about their ability to perform a certain task. This is an important concept in the field of chronic pain. Regardless how effective a treatment is, unless the person has positive self-efficacy beliefs and therefore believe that they can engage in the treatment, they will not participate in it, and therefore it cannot be effective. Therefore, its effectiveness will be low. The beliefs include both that they can do what is required to complete the treatment, and that the treatment will work for them. Not surprisingly, expectancies of self-efficacy have been reported to determine choice of activities, and be related to treatment outcomes, degree of effort, and persistence. Anticipation of pain reduces activities and contributes to disability (Turk, 1996a). A person bases their

self-efficacy judgements on their past performance, others' past performances, persuasion by others, and physiological arousal (Bandura, 1977). Perceived efficacy increases functioning by increasing the likelihood that the person will use skills and persevere with them rather than give up. It also decreases bodily tension, which may add to pain (Turk, 1996a). Low self-efficacy of pain control is related to low pain tolerance (Turk, 1996b).

Cognitive errors also contribute to chronic pain. This occurs when people view their world with unhelpful biases. Although common, these errors rarely cause difficulties if they are quickly corrected. However, with maladaptive cognitive errors, this correction does not occur, and people continue to use cognitive errors in interpreting their pain, themselves, and the world. This is important because cognitive theory predicts that everyone interprets reality and behaves and feels according to their interpretation, rather than the reality. Common cognitive errors identified in people with chronic pain are: catastrophising (for example, thinking the effects of their pain are more exaggerated than they actually are); overgeneralisation (for example, thinking that if they feel pain from one activity, that they cannot undertake any activity); personalisation (for example, they take personally something that is general and not meant personally); and selective abstraction (for example, choosing to look at only one aspect of their lives and ignoring all others). Catastrophising appears to be a particularly important cognitive error in chronic pain (Turk, 1996b). Cognitive errors are related to depression, pain-intensity, and disability (Turk, 1996a, 1996b). Negative thoughts, which may result from cognitive errors, have been shown to predict long-term adjustment to chronic pain and to mediate the relationship between pain severity and disability (Smith, Peck, & Ward, 1990). Therefore, how people interpret their world and their pain affects their experience of chronic pain.

Experimental evidence supports the cognitive-behavioural theory. Pain-related beliefs are associated with both physical and psychological functioning. Pain-related beliefs are also associated with coping, pain-behaviours, and treatment outcome (Jensen, Romano, Turner, Good, & Wald, 1999). Cognitive factors have been found to affect muscle tension (Turk, 1996b). As Turk (1996b) suggests "cognitive processes may influence sympathetic arousal and thereby predispose individuals to further injury or otherwise complicate the process of recovery" (p. 22).

Cognitive-behavioural theory focuses on the internal processes of the individual and depicts the person as an information processor. It considers the cognitions and affect that accompany the behaviour, in conjunction with the behaviour itself. Cognitive-behavioural theory suggests that people changing their thought processes can change maladaptive pain-behaviour, in addition to targeting specific behaviours Roy *et al.* (1982). People are encouraged to examine their situation and the resources they perceive they have to cope with the situation.

Cognitive-behavioural theory includes many of the single factor constructs previously discussed under the heading of behavioural and learning theories, and cognitive-based theories in sections 1.7.2.2 and 1.7.2.3. However, this theory is integrative in nature, involving the presentation of cognitive, affective, and behavioural aspects as a closely interacting system.

PSYCHOBIOLOGICAL THEORY

The theories presented above provide insight into why pain might become chronic. By themselves, they lack the integration and comprehensiveness required to explain the development and maintenance of chronic pain and disability. They explain only a very small aspect of the development and/or maintenance of chronic pain and disability, such as biological, cognitive, learning, family, and modelling factors. Flor *et al.* (1990) acknowledged this and examined chronic pain from a psychobiological perspective. They suggested that pain involved physiological, behavioural, and subjective components. They combined empirical research and theories from many different perspectives to present basic components involved in the development of chronic pain. This differs in some important aspects from the cognitive-behavioural perspective discussed above. In particular, the psychobiological theory explicitly and specifically discusses the biological aspects, including genetics. It also addresses chronic pain explicitly in a longitudinal manner, with particular emphasis on predisposing factors, which are sometimes present long before pain is experienced.

The first component Flor *et al.* (1990) identified were predisposing factors, for example, genetics, previous trauma, and social learning. A genetic contribution is suggested, particularly when there is no trauma, yet there is recurrent or chronic pain (e.g., migraine headaches). Conversely, a chronic pain patient with an obvious injury often has little evidence of genetic input. Empirical evidence for genetic contribution is scarce because studies have mainly been conducted with non-human animals. Previous experience and learning are important as the person learns appropriate responses and interpretations of physical symptoms. Exposure to mild or moderate pain early in life, especially if the pain was controllable, appears to desensitise the perception of pain. This is especially true if there was also social disapproval for pain-behaviours and positive reinforcement for adaptive coping.

The second component identified was precipitating stimuli, for example, aversive external or internal stimuli. With the onset of acute pain, previously positive or neutral activities may become aversive, leading to the avoidance of these activities. Over time further activities may be avoided, as they are perceived to increase pain. This avoidance may be reinforced, both by the successful avoidance of pain, and also through social reinforcement by others. The anticipation of pain may cause muscle tension and anxiety, causing additional physiological changes. While pain itself can be stressful, it can also increase the amount of stress inherent in other situations. The uncontrollability of most pain causes physiological changes and reduces natural opioids. These factors may lead to a physiologically vicious cycle with stress-causing tension, which in turn, causes physiological change, with this leading to increased stress.

Thirdly, precipitating responses were identified as contributing to chronic pain. Examples of these are maladaptive behavioural, cognitive, or physiological responses such as preoccupation with physical symptoms; avoidance or depressive withdrawal; and maladaptive chronic pain-behaviours, in particular, adhering to acute pain-behaviours such as inactivity. The performance of chronic pain patients is highly related to their sense of self-efficacy. They often misinterpret physical symptoms as being painful and they tend to overemphasise physical symptoms. They also tend to attribute pain to the worsening of their condition. A similar physiological response is created when a person thinks about

pain as when they actually noiceptively experience it. Beliefs about efficacy of managing pain are particularly important.

Finally there were maintaining processes, such as, classical and operant conditioning, and social processes. These processes provide the foundation for the maintenance of chronic pain-behaviour (as described above under behavioural and learning, and cognitive-based theories in sections 1.7.2.2 and 1.7.2.3. In summary, this theory comprises four processes that affect the development and maintenance of chronic pain. These are: predisposing factors, precipitating stimuli, precipitating responses, and maintaining processes.

A similarly structured, although potentially less useful, theory is that of the conditioned orthopaedic syndrome (Onorato, 1989). This theory addresses several different areas important in the development of chronic pain. Again, this theory is theoretically rather than empirically driven. The conditioned orthopaedic syndrome theory assumes that chronic pain, and the functional limitations that occur, are developed over time due to learning and an interaction between the following four factors (Onorato, 1989). First, pre-existing personality and nervous-system functioning, encompassing temperament, psychopathology, and personality attributes that influence pain tolerance. Examples of these are reactivity, extroversion, neuroticism, and anxiety. The second factor is physical damage following an injury. Tissue damage is seen as critical to this theory, especially muscular changes. The third factor encompasses behavioural, psychological, and psychophysiological responses. Aversive lifestyle changes are common in those suffering from chronic pain. These include loss of employment, financial security, usual recreation and social activity; involvement in possibly time-consuming, expensive and painful treatment; and emotional responses such as depression, anxiety, and anger. Finally, there are the situational factors, which include the effects of factors such as compensation and personality on reports of pain and demonstrations of pain-behaviour (Onorato, 1989). The interaction of these four factors is not adequately explained by this theory, nor has it been confirmed by specific empirical evidence.

BIOPSYCHOSOCIAL THEORY

The development of pain theory has gradually moved from the biomedical to a more biopsychosocial focus. The biopsychosocial theory suggests a complex interaction between the biological, psychological, and social factors involved in pain experience, health, and well being (Turk, 1996b). This theory combines psychological factors such as past experience, attention, and emotion with sensory perception. Pain, theoretically, becomes less of a signal and more of a process (Kugelman, 1997). It is seen as subjective and dependent on sociopsychophysiological factors. Therefore, there is a need to consider the patient's daily activities in context with the meaning the patient construes from his or her situation (Clancy & McVicar, 1992). The biopsychosocial theory sees health as something to be achieved rather than purely the absence of disease. This view has implications for treatment, in that one treats the patient rather than the disease. For chronic pain this suggests holistic management rather than seeking a cure (Kugelman, 1997).

Turk (1996b) was clear about the etiological function of psychophysiological factors and said "it

is probably more appropriate to refer to abnormal psychophysiological patterns as antecedents of chronic pain states or to view them as consequences of chronic pain that subsequently maintain or exacerbate the symptoms, rather than to assign them any direct etiological significance" (p. 22). Psychological factors have a direct influence on pain tolerance, endogenous opioids, and the body's immune system (Turk, 1996b).

Talo, Rytokoski, Puukka, Alanen, Niitsuo, Hamalainen, Vaara, and Tuomaala (1995) suggest a theory that systematically examines the different aspects and consequences of chronic pain. This biopsychosocial disease consequence theory is based on a biopsychosocial approach and the World Health Organisation's classification of impairment, disability, and handicap (Talo *et al.*, 1995). It builds duality of mind and body into the theory. The authors suggest a 3x3 table with body (biomedical), mind (psychological) and environment (social) on one axis and impairment (factual), disability (individual), and handicap (interactional) on the other. This provides a useful way of exploring and including different aspects of chronic pain. However, the authors point to difficulties, especially in determining disability and handicap; as there is an overlap, which makes this theory somewhat difficult to use (Talo *et al.*, 1995).

SOCIO-ECOLOGICAL THEORY

White (1990) suggested that there exist two co-occurring states, a disease and an illness state. The disease state encompasses biophysiology. The illness state is of more interest to this current research and encompasses emotion, cognition, learning, and motivation. In the illness state, there is a constant two-way interaction between the person, and the physical and social environments in which they live. This is the first factor in the illness state. The environment itself also contains many interacting parts. The development and maintenance of chronic pain is an open system. This system contains symptoms that are contributable to both the physical and emotional sensations. The second factor in the illness state is illness-behaviours. The third factor is the sick role, or the accepted role in the health context. Being open, the system can be influenced by pathophysiology, learning, and sociocultural factors.

The pain system is similar to the illness state system, because pain exists as a symptom. This pain is influenced by tissue damage, analgesia, and pain-behaviours. These pain-behaviours are affected by reinforcement, competition, and pain roles, which are in turn influenced by stigma and status. The three factors in the illness state interact with outside forces, in addition to interacting as a system. As a result, changing one factor affects the others (White, 1990).

This theory identifies a framework in which to examine chronic pain constructs. However, it clearly separates biological (disease state) from psychological and social factors (illness state), and it is not clear how these two states interact. The theory discusses interesting ways of examining chronic pain, but to be an effective comprehensive theory, it needs to include many of the other concepts and specifics previously described in the discussion of single factor and other comprehensive theories.

MULTIDIMENSIONAL THEORY

Jensen, Turner, Romano, and Karoly (1991a) looked beyond simple theories that examined only one aspect of chronic pain. They reviewed the available literature, summarised factors that were identified as being important in coping with chronic pain, and integrated them. These factors are not necessarily causal mechanisms or related to the epidemiology of chronic pain. The factors that they identified from the literature as being important in the development of chronic pain included: perception of control; whether the control is perceived to be internal or external; beliefs of ability to achieve; and perception of consequences of actions. Further, Jensen *et al.* (1991a) showed that a person's beliefs could increase or decrease physical and psychological functioning. They proposed that cognitive errors and a person's attachment style also contributed to coping with chronic pain.

This multidimensional theory is effective as a comprehensive theory, as it examines and integrates existing research. It theorises a general all-encompassing theory explaining why some people develop chronic pain while others do not. It primarily examines cognitive factors, although it also discusses other concepts. As yet, it has not been empirically examined.

DIATHESIS-STRESS THEORY

Many of the comprehensive theories for chronic pain discussed above appear to be variants on a common theme. Although the diathesis-stress theory explicitly states the role of diathesis-stress, this also appears to be the basis for many other comprehensive theories.

Kerns and Jacob (1995) proposed a theory for chronic pain that focuses on the social or family context of the pain. The theory includes the interaction of sensory factors together with social and psychological factors. It includes multiple prior vulnerabilities to pain, such as pre-existing personality features, which may predispose a person to develop chronic pain.

When a person experiences acute pain this presents them with challenges in many areas, including biological, cognitive, affective, behavioural, interpersonal, and social. The diathesis-stress theory suggests that the person's prior vulnerabilities, and the challenges that acute pain presents, determine whether they develop chronic pain and suffer from functional impairment. A summary of the effects of the various challenges follows.

Challenges to the cognitive domain include challenges to the person's perception of self control, helplessness and hopelessness through a failure to alleviate pain, a reduction in adaptive problem-solving activity, and negative cognitions and dysfunctional thinking, which leads to behavioural and affective changes. The person's prior information processing and coping styles mediate cognitive changes (Kerns & Jacob, 1995).

Challenges to the affective domain may include depression, anxiety, and fear. Links have been found between some brain chemicals, thought to have an effect in depression, and those thought to have an effect in chronic pain. Anxious and depressive styles may be precursors to the onset of acute pain, therefore predisposing a person to develop chronic pain (Kerns & Jacob, 1995).

Behavioural challenges of pain include decreased activity across many domains, which may be related

to physical damage, fear of pain, and/or social reinforcement. Deficits in functional behaviour are more likely to occur when the person has pre-existing skill deficits. These may reduce the flexibility of the person to adaptively change behaviour (Kerns & Jacob, 1995).

Challenges to social interaction can also affect the presentation of chronic pain. Social interaction may mediate cognitive, affective, and behavioural challenges. Although social support can have mixed results, it may provide a buffering effect for the many challenges that pain provides. However it may also reinforce pain-related behaviours, thus increasing the likelihood of chronic pain developing (Kerns & Jacob, 1995).

In summary, pain causes challenges and stress. The diathesis-stress model predicts that chronic pain will develop if the person already has a high level of stress and is not prepared for the challenges that pain presents to them. This theory discusses many of the concepts already identified in other comprehensive theories, however with less emphasis on biological aspects. It has the advantage that it clearly links the different concepts or components of chronic pain together within the diathesis-stress framework. To enhance this comprehensive theory, more use could be made of existing research outlined above in both the single factor and comprehensive theories.

SUMMARY OF COMPREHENSIVE OR MULTIFACTORAL MODELS

The gate control theory with its recent modifications by Melzack (1993) provides a valuable basis for the understanding and treatment of chronic pain. However, requires additional work is needed to integrate it with other research findings and theory to make it specific enough to be truly applicable in the understanding, management, and treatment of chronic pain and disability in the twenty first century.

Flor *et al.* (1990), Jensen *et al.* (1991a), and Violon (1985) all suggested that further research studying the variables currently identified as being involved with chronic pain is necessary to determine which factors are significant. The chronic pain area is clearly lacking an overall unifying theory that encompasses all the components that have been mentioned above. Also further research may identify new factors. Unfortunately, many of the authors failed to account for other published work when describing their own theory. In addition, many of their theories are not evaluated by data-driven research.

1.7.4 MICRO MODELS

There are few micro models that explain chronic pain. However, many authors have identified the need for such theories. The one micro model identified in the literature, and described below, is Violon's process of becoming a chronic pain patient. Micro models are descriptive theories that specify the intricate factors and processes associated with the development or maintenance of chronic pain and disability.

This is particularly problematic as the theories discussed above describe the end-state of being in chronic pain and neglect the process leading to chronic pain. As Mikail *et al.* (1994) suggest, a

theory of chronic pain needs to accommodate the diversity of pain, account for its developmental sequence, and acknowledge that it is not static. Further, Roy *et al.* (1982) suggest there are a number of theories in the chronic pain area, but that each one examines only a small part of the available data. In addition, researchers use different language in an attempt to explain the same phenomena. A unified, process-orientated and data-driven concept of chronic pain is clearly required.

VIOLON'S PROCESS OF BECOMING A CHRONIC PAIN PATIENT

Violon (1982) reviewed the literature and stated "no single theory of work has given an adequate theory of why some persons become chronic pain patients" (p. 23). She makes an attempt to rectify this state of affairs by proposing a theory for the process of developing chronic pain.

Violon (1982) proposes the rate of chronic pain (and mental disorder) may be accounted for by the miserable childhood and affective deprivation that many chronic pain patients report. Her theory introduces vulnerability factors, particularly the patient's childhood and family functioning. It is proposed that chronic pain patient's parents or guardians were abandoning, punitive, abusive, cold, and/or depressed. As a result, the pain patient becomes neurotic, has early suffering, lacks bodily gratification, which leads to distortion of bodily perception, and sees pain as a way of communicating. These factors increase the patient's proneness to pain and depression. When faced with this background, the addition of life-problems, environmental effects, any increase in depression, and psychophysiological factors, leads to the development of pain. Given the onset of pain, the focus is on physical modification of pain, both by the patient and health-professionals. A neurovegetative (parasympathetic division of the autonomic nervous system) disturbance is also proposed, which interacts with the focus on physical pain modification. These factors lead to disinvestment in life, resulting in increased depression and perception of pain. This, in turn, leads to chronic pain syndrome or what Violon (1982) calls "algopathia". She defines algopathia as a disease in itself and describes its process as being "useless", as opposed to the "useful" process of symptomatic pain.

While this theory addresses many of the salient factors in the development of chronic pain, Violon (1982) admits her theory is incomplete. Further, she does not provide specific information concerning either the content or the process proposed in this model. It is further limited by its speculative derivation, and has yet to be empirically tested. Violon (1982) presents interesting data suggesting that chronic pain patients have an increased rate of depression and other mental disorders, both personally and in their families. She also states that they have a higher rate of chronic pain in their families. It needs integration with other theories of chronic pain, specifically with social learning theories.

Interestingly, while Violon's (1982) theory has been published for nearly twenty years there is little discussion of it, or the uniqueness of the level at which it is presented as a general theory of chronic pain. Nor is there empirical data specifically supporting this theory. Interestingly, even Violon, in her publications since 1982 (eg., Violon, 1985) does not further explore her own process theory.

1.8 SUMMARY OF INTRODUCTION

In summary, chronic pain is a multidimensional construct affecting a wide range of areas. Acute and chronic pain are often seen as separate, although related constructs, usually separated on the basis of time frame. The measurement of chronic pain is somewhat difficult as it has many different dimensions. Measurement of chronic pain is also often done retrospectively and in comparison with previous pain, which provides further difficulties. The exact prevalence of acute and chronic pain depend on how they are measured. Regardless of how they are measured, both acute and chronic pain are prevalent, and appear to becoming more common, both in New Zealand and the rest of the world. Chronic pain has a large impact on a range of areas. It does not affect just the person who is in pain, it affects all of society. At present, chronic pain is neither well predicted nor effectively treated, despite the fact that some factors have been identified as being important both in the prediction and treatment domains. More research on the development and maintenance of chronic pain and disability is needed to guide its prevention and treatment.

It is important for any area of psychology that there be theories at each of the three levels identified by Ward and Hudson (1998). As this review of the literature has made clear, there are many single factor theories in the area of chronic pain. However, these theories generally exist in isolation. Most researchers have not integrated their findings with those of other researcher across the wider area of chronic pain. However, a few have attempted to do this, leading to multifactorial theories. The difficulty with these multifactorial theories is that they are derived theoretically and often not systematically empirically tested. Working in this fashion also does not identify any additional factors that may further account for the development and/or maintenance of chronic pain and disability. As has been discussed above, few micro theories were found in this review of the literature to account for the process of developing or maintaining chronic pain.

1.9 RATIONALE FOR CURRENT STUDY

Chronic pain is a serious problem. It has extensive and devastating effects and implications. It affects a wide range of the population, in a number of countries, and appears to be growing in prevalence. At present, there are no consistently effective ways of identifying who will develop chronic pain. Nor are there reliably effective methods of prevention and treatment to manage this growing problem. In addition, the literature is fragmented and incomplete in places. In particular, it lacks appropriate data-driven, process theories.

A thorough theoretical understanding of the chronic pain area, including integration of the many good current theories, and the development of data-driven, as opposed to theoretically generated, process theories of the development and maintenance of chronic pain and disability, could help address this difficulty. From such a theoretical understanding, models for the prediction and implementation of appropriate treatment programmes could reduce the number of people developing and continuing to suffer from chronic pain and disability. This would reduce the many negative individual, interpersonal, and community consequences. - This study intends to add to the extensive research base in

the area of chronic pain by developing a much-needed model of the process of the development and maintenance of chronic pain and disability. It uses the data-driven qualitative method of grounded theory to achieve this. Other researchers have identified the usefulness of grounded theory in the health arena. For example, Mullen and Reynolds (1994) suggest that most health research has been deductive and hypothesis testing in nature rather than inductive or abductive. As a result, the research has often not been very useful in developing health theory or practice. Grounded theory has been described by Noerager (1994) to be useful in gaining a fresh perspective on familiar areas, particularly when applying it to practical problems. Charmaz (1994a) has found that grounded theory is useful for studying chronic illness and the experiences of people suffering from chronic conditions. She also says that grounded theory can then provide health-professionals with alternative understandings of patients, to those found in the current health-professional literature. As a result, health-professionals may be able to use this understanding to improve communications with patients and address problems that patients describe.

Chapter 2

METHODOLOGY

As outlined in the introduction, there are many and varied theories which attempt to explain the development and maintenance of chronic pain and disability. However, most lack an integrated explanation of how chronic pain and disability is developed or maintained. This is largely due to the theories being formulated speculatively rather than from empirical data. Many researchers confirm speculative theories by empirical testing. These theories are usually not driven by empirical research or data, although some may be based on clinical experience. Therefore, further research into the area of chronic pain and disability needs to be conducted at the micro or process level and then this needs to be integrated into existing theory. Research needs to be based on the experience of people suffering from chronic pain in order to provide an integrated theory that adequately explains the process of the development and maintenance of chronic pain and disability to address treatment and prevention issues. It can therefore be used to reduce the incidence and impact of chronic pain and disability and to guide treatment and management.

This chapter provides a brief discussion of the philosophy of science (section 2.1). It explores both qualitative and quantitative methods (section 2.2). This is followed by a discussion of grounded theory (section 2.3), and then the specific method used in this study (section 2.4). Finally, the results and discussion chapters are overviewed (section 2.5).

2.1 PHILOSOPHY OF SCIENCE

The philosophy of science used by researchers to explain reality influences how they undertake and interpret research. Maykat and Morehouse (1994) clearly make this point by saying: "the way we understand the nature of reality directly affects the way we see ourselves in relation to knowledge. If knowledge can be separated into parts and examined individually, it follows that the knower or the researcher can stand apart from who or what s/he is examining. On the other hand, if knowledge is constructed, then the knower can not be totally separated from what is known" (p. 11). Overarching assumptions about the nature of reality, or the paradigm under which the researcher is operating, need to be examined. The overarching assumptions can be broken into four areas: the nature of reality, or ontology; the origins of knowledge, or epistemology; the demonstration, verification and generalisability of the research, or logic; and the purpose, or teleology (Maykat & Morehouse,

1994). Qualitative and quantitative research differ in their basic underlying paradigms. In quantitative research, the underlying paradigm is generally taken to be positivist. By contrast qualitative research is usually based on phenomenology (Maykat & Morehouse, 1994). The positivist position is commonly thought to be synonymous with scientific or observable facts, whereas the phenomenological approach focuses on understanding what the participants mean. If the underlying philosophies of qualitative research are not understood, then qualitative research will often be judged in terms of the quantitative, positivistic philosophy. According to the positivist criteria, qualitative research is considered to be a less rigorous scientific method (Maykat & Morehouse, 1994). A contributing factor to the problems in judging the worth of qualitative research was that researchers did not provide their methodologies along with their findings so the methodologies could be examined. Kuhn (1962) and Lincoln and Guba (1985) have done much to address these difficulties and legitimise qualitative research methods.

The positivist approach suggests that there is one reality, and that by studying the parts one can understand the whole. True objectivity is thought to be possible under this approach. A person is thought to be able to suspend his or her values and objectively understand reality. Causal links are possible, and explanations pertaining to a situation can be generalised using this approach. This is because the positive approach to research aims to eliminate unique aspects of the environment. Exerting control by external manipulation is fundamental. Research needs to verify or “prove” hypotheses. However, the positivist model has not been able to adequately explain how new knowledge is discovered, as it is focussed on verification. Quantitative research methodologies suit this positivist approach and interpretation of the world (Maykat & Morehouse, 1994). This is because of their emphasis on control, objectivity and examining parts of reality.

The phenomenological approach suggests that realities are multiple. These are thought to be interconnected, creating a whole. The whole is considered as greater than the sum of the parts and is to be understood only as a whole. According to this approach, true objectivity is not possible. Researchers depend on their knowledge and their values affect their understanding. The cause and effect relationships are multidimensional. Explanations need to be tentative and situation-specific. Researchers aim to discover rather than prove. Qualitative research fits with this phenomenological approach and interpretation of the world (Maykat & Morehouse, 1994). As Maykat and Morehouse (1994) suggest: “qualitative research looks to understanding a situation as it is constructed by the participants” (p. 18). The qualitative researcher then has to identify patterns in the participants’ constructions and present them to others to examine, while remaining close to the data. Maykat and Morehouse (1994) also say: “the goal of qualitative research is to discover patterns which emerge after close observation, careful documentation, and thoughtful analysis of the research topic. What can be discovered by qualitative research are not sweeping generalizations but contextual findings” (p. 21). This is similar to how hypotheses are created in quantitative research. The hypothesis is usually developed as an educated guess based on observation. This, in turn, is verified using quantitative methods (Maykat & Morehouse, 1994). The distinction between qualitative and quantitative methods is that qualitative research is more strongly data-driven when developing hypotheses or theories and less focussed on verification.

Few psychologists today work under a strict logical positivist philosophy. Instead they practice using a range of post-positivist epistemologies, which recognise a level of explanation and interpretation in scientific research (Madill, Jordan, & Shirley, 2000). Despite this, traditional research methods still emphasise the importance of objectivity in data collection and analysis and the use of statistics as the main method of data analysis. Therefore under a post-positivist approach, reliable results are about phenomena that are relatively independent of the researcher. However, the possibility of social sciences producing objective research has been questioned and the use of qualitative methods promoted as relevant (Madill *et al.*, 2000). Martin and Sugarman (2001a) suggest that people are best thought of as existing in a real world, but that this world is contingent on physical, biological and sociocultural influences. Thus, it is important to understand psychology in terms historical, developmental and sociocultural contexts, while appropriately balancing it with physical and biological factors.

Quantitative research is founded on observations or self-reports which are usually converted into a numerical form and compared, using statistics. Conversely, qualitative research is based on observations, or words that closely represent the situation as experienced by the participants (Maykat & Morehouse, 1994).

A prominent example of qualitative research is grounded theory (Maykat & Morehouse, 1994). Glaser and Strauss (1967) provided a sustained argument for using grounded theory at a time when qualitative research was seen as preliminary to “real” quantitative research. Grounded theory is the method used in this study. A strength of grounded theory research is that it is a constant comparative method. It questions gaps, omissions, inconsistencies, misunderstandings, and not-yet understandings in a proposed theory or hypothesis (Addison, 1989). Grounded theory identifies the importance of context. It is founded on the understanding that the tasks of collecting, coding, and analysing data cannot be separated from each other. The new theory grows out of this process and is grounded in data, not merely constructed by the researcher (Addison, 1989).

When using grounded theory the researcher examines the data for patterns, both within and across participants. Hypotheses, which are generated from the data, are tested on subsequent cases and modified if they do not fit the new data. Hypothesis testing is an important complement to hypothesis generation using the grounded theory method (Gilgun, 1992). Most research emphasises hypothesis testing rather than generation. Hypothesis generation is often considered to have a lower status in research and to be exploratory in nature (Gilgun, 1992).

The structure of the sample, or participants chosen, also differs between qualitative, particularly grounded theory, research and positivist quantitative research. With grounded theory the participants are constantly varying on specific variables (Gilgun, 1992). However, with positivist research the participants are typically randomly selected and designed to be representative of a given population. Grounded theory does not use traditional statistical techniques such as random sampling (Charmaz, 1994a).

Chamberlain (1999) summarises and discusses the premises behind qualitative research and grounded theory. Grounded theory can be seen as “contextual” as it is based on developing theory which is grounded in data. Grounded theory reflects the participants’ situations and experiences, and thus

could be based in realism, and also insists that the theory is based in data, which is constructivist (Chamberlain, 1999). It may be that the different versions of grounded theory are based in different paradigms, with typically Glasian grounded theory being post-positivist and the Straussian grounded theory being constructivist. It is important to note that grounded theory is constantly evolving, including by its original founders, and is not a static method. Therefore, it is flexible and may fall under many epistemological and ontological positions. Grounded theory is explained in more detail below in section 2.3.

In qualitative research the researcher is a tool, rather than attempting to obtain objectivity via standardised tests and statistics (Maykat & Morehouse, 1994). The researcher, as a human instrument, has advantages over some non-human tests in that he or she is adaptable and flexible. The human instrument can immediately explore aspects of situations as they arise and clarify responses, even if such responses were not imagined prior to the study (Maykat & Morehouse, 1994). Alternatively, the positivist position suggests that the world can be broken into smaller parts and therefore examined by non-human instruments, which are pre-designed and thought to be more objective (Maykat & Morehouse, 1994). Morgan (1996) discusses the subjectivity of qualitative research and suggests that people are not part of the natural world, but rather part of the social world and therefore cannot be separated from their social world and examined. The important distinction in research needs to be between fact and opinion. This is not so much about objectivity, as is often suggested, but about repeatability. This means that if a research procedure is exactly replicated it should produce the same outcome (Kinach, 1996). However, this is not always practical with some research areas. As a result, positivist theories can become isolated from the social areas they are trying to explain, therefore they may not be useful in a practical sense (Kinach, 1996).

Traditionally, objectivity in research has been approached by abolishing the link between the participant and the researcher, controlling the interaction, and having clear goals prior to commencing the research. Distinct sample criteria are thought to increase the scientific objectivity of the research, for example, large and random samples (Okely, 1975). However, objectivity is merely an ideal rather than an achievable goal. Subjectivity cannot be overcome by distancing. The concept of being impersonal is often confused with objectivity. Using a person as a research tool is often represented as being opposite to objective, however, this is not necessarily the case (Okely, 1975). There is no clear distinction of objectivity between using distant non-human research tools and a human instrument; either can be equally objective. People are not indifferent to events, but rather they interact with them. This is important in research, because how people are categorised in part determines their behaviour. This is different from most sciences. As a result, objectivity in the field of psychology is difficult (Martin & Sugarman, 2001b).

2.2 QUALITATIVE AND QUANTITATIVE METHODS

Psychologists continue to debate the value of different research methodologies. Qualitative methods are often seen as being quite different from quantitative methods. Many arguments are put forward as to the virtues and vices of each. A summary of the main arguments is presented below, with the

conclusion that, at least within the discipline of psychology, both quantitative and qualitative methods are useful and productive techniques for conducting research (Denzin & Lincoln, 1994; Henwood & Nicolson, 1995a; Henwood & Pidgeon, 1992, 1995b; Patton, 1980, 1990).

Qualitative research methods have long been used in psychology, but they have tended to be precursors to quantitative methods (Henwood & Nicolson, 1995a). For example, it has been used in small and specific studies to find the wording of a questionnaire. In this thesis an argument will be made that qualitative research is valuable in its own right.

Quantitative methods have been considered equivalent to science, and as being impartial, value free, valid, reliable, and accurate. This follows from the fact that these methods are thought of as empirical and experimental (Henwood & Nicolson, 1995a; Henwood & Pidgeon, 1995b). Quantitative methods are generally hypothetico-deductive and positivist in nature as opposed to the generally constructivist, interpretive and naturalistic methods of qualitative research (Henwood & Pidgeon, 1992). As a consequence, research problems are usually investigated using one of these two different types of methods and their associated methodologies.

2.2.1 QUANTITATIVE RESEARCH

The emphasis of quantitative research strategies is to manipulate, control, and measure variables in order to verify or falsify prior theory (Henwood & Pidgeon, 1992; Leininger, 1994; Swanson & Chapman, 1994). Thus, the researcher decides, before the study starts, which hypotheses the research is to investigate, which variables will be studied, and which relationships between the variables are expected (Denzin & Lincoln, 1994; Henwood & Nicolson, 1995a; Henwood & Pidgeon, 1992, 1995b; Patton, 1980, 1990).

Quantitative methods use standardised measures, and obtain information pertaining to a limited area using large numbers of subjects. The researcher attempts to control external conditions, reduce variance, and manipulate one or more variables. This strategy assumes the variables are observable, manipulable, and the hypotheses about them are testable. The variables are tested for statistical significance, which is based on probabilities and large, randomly selected samples. The dominant quantitative methods are based on hypothesis testing (Denzin & Lincoln, 1994; Henwood & Nicolson, 1995a; Henwood & Pidgeon, 1992, 1995b; Patton, 1980, 1990).

Quantitative research abstracts from the world, rather than studying it holistically and directly. It attempts to be distant and rational. As a consequence, the results are thought to be accurate, replicable, broadly generalisable, and a basis for predictions. This is all assumed to occur in a value-free environment. Therefore, the measurements and results are assumed to be objective. Quantitative analysis assumes that the world consists of objectively defined facts and that it is possible to isolate variables and measure individual parts, putting them together to create a unified whole (Altheide & Johnson, 1994; Denzin & Lincoln, 1994; Fontana & Frey, 1994; Henwood & Pidgeon, 1992, 1995b; Patton, 1980, 1990).

2.2.1.1 Advantages and Disadvantages of Quantitative Research

The empirical, experimental method of quantitative research allows the researcher to make comparisons, assess relationships between variables, and to comment on, and formulate, the laws of cause and effect (Denzin & Lincoln, 1994; Henwood & Nicolson, 1995a; Henwood & Pidgeon, 1992, 1995b; Patton, 1980, 1990). Quantitative research aims to generalise from one particular sample or situation to a specified population. Quantitative analysis is usually standardised and the data are often easily analysed and presented. With these methods, reliability and validity are easily determined by the measures used and the nature of their application (Denzin & Lincoln, 1994; Henwood & Nicolson, 1995a; Henwood & Pidgeon, 1992, 1995b; Patton, 1980, 1990).

There are some disadvantages to these “accurate” methods. Debate exists as to whether it is practical or useful to take anything but a holistic view of the world. Patton (1980) claims that one cannot simply take the world apart, measure it and put it back together again. Quantitative methods neglect uniqueness and may inappropriately fix meaning. Quantitative strategies use inferential statistics as their main measure of worth (Henwood & Pidgeon, 1992). Therefore, they provide only statistically generalisable patterns, not depth, detail, or personal meaning (Denzin & Lincoln, 1994; Patton, 1990). Statistical significance may, or may not, indicate clinical significance. Quantitative research findings can therefore be more easily dismissed because of this. It is harder to dismiss the power of personal statements (Patton, 1990). Quantitative research is typically performed using one test or a pre-post test. It usually does not measure, or comment on, what happens between these two stages. It can only identify whether an intervention, or other measured variable, was statistically significant, or different. However, behaviour and behaviour change are processes that cannot be sufficiently explained by quantitative methods (Swanson & Chapman, 1994).

Quantitative research tests only prior theory, it does not direct research. It looks for answers, to confirm or verify theory; it does not create questions (Henwood & Pidgeon, 1992; Swanson & Chapman, 1994). The theory has to come from somewhere to be tested; this is often from “gut feeling”, observations and clinical judgement, or qualitative research. Also, if a significance test in quantitative research does not reach significance, then the research is generally not published, and valuable information and resources may have been wasted (Swanson & Chapman, 1994). Quantitative methods are usually used by default rather than by informed choice, as this is what is generally taught in universities, and other teaching and research institutions (Henwood & Pidgeon, 1992).

2.2.2 QUALITATIVE RESEARCH

Qualitative research has a different focus than quantitative research. It looks for questions rather than attempting to confirm or support pre-produced answers. It aims to understand. It uses words, behaviours, or even pictures as its data. Unlike quantitative research, it does not generally reduce this data to numbers or attempt to statistically analyse it. It aims to produce specific information regarding a specific situation, rather than generalising to the general population. Thus, it creates, and then may test theory, rather than testing a hypothesis that was created before the research began.

Qualitative research is usually used to ground quantitative research, through exploratory research, or

a pilot study. However, the opposite strategy, with quantitative studies grounding qualitative studies is sometimes undertaken. In this case, a quantitative study is used to find comparison groups for qualitative research (Henwood & Pidgeon, 1992; Silverman, 1993). Qualitative research searches for questions to develop theory. There is a commitment to authenticity and detail (Swanson & Chapman, 1994; Van Maanen, 1979). Qualitatively generating theory involves undertaking a process of research. The goal of qualitative research is to understand the area and the process (Altheide & Johnson, 1994; Patton, 1980; Swanson & Chapman, 1994). This is important, as some academic non-grounded theories have been criticised as having little relevance to practitioners in their everyday work (Patton, 1980). Qualitative research takes a holistic view; it assumes that the whole is greater than the sum of the parts. Therefore, using this philosophy, a situation cannot be merely measured in parts, or by studying isolated variables (Patton, 1980). Researchers conduct qualitative research, not because that is the only methodology that they are taught, but because they find that it works for them and their area of study (Van Maanen, 1979).

Qualitative methods have often been called “soft” science, unscientific, or exploratory. They are often thought of as producing mere description, not theory. Qualitative research is sometimes accused of being full of bias, unreliable, impressionistic, and not objective (Denzin & Lincoln, 1994). Many people do not respect qualitative research because they have previously experienced “bad” qualitative research. This leads them to conclude that all qualitative research is “bad” (Patton, 1990). Unfortunately, some of what people call “qualitative research”, has not used good scientific methods. In these cases, this criticism is true, but in most cases it is simply untrue (Van Maanen, 1979). Part of the confusion surrounding qualitative methods may have come about because the different qualitative methods are often not distinguished from each other. Instead they are considered together under one umbrella.

2.2.2.1 Types of Qualitative Research

Qualitative research methods are used in many theoretical paradigms (e.g., constructivist, feminist, and cultural studies) and across many disciplines (e.g., nursing, sociology, and psychology) (Denzin & Lincoln, 1994; Griffin, 1995). However, the primary differentiation tends to be made between qualitative and quantitative research. This neglects the fact that there is more than one method in qualitative research (Patton, 1990). Different types of qualitative methods have been used in different situations, by different people, producing different end products. The term “qualitative methods” have meant different things to different people. This causes confusion, as it does not refer to just one method (Patton, 1990). The difference between qualitative (naturalistic, holistic, inductive) and quantitative (experimental, logical-deductive) methodologies is not dichotomous (Patton, 1990). The difference is that the emphasis in qualitative methods is on theory development rather than testing theory developed by a priori assumptions (Denzin & Lincoln, 1994). An outline of some of the different types of qualitative research follows:

- *Phenomenology* - This is an analysis of immediate experience. It examines basic elements of experience that are common to members of a society. Phenomenological methods avoid

focusing on the physical events, rather they concentrate on how they are experienced. The meaning of phenomenology has become confused. It can refer either to what people experience and how they interpret the world, or it can involve the active experience of the phenomenon being researched. Despite this confusion, phenomenology in general involves “telling one’s own story” (Denzin & Lincoln, 1994; Reber, 1985; Smith, 1995).

- *Ethnography* - The emphasis of ethnography is on culture and interpreting findings from a cultural perspective (Denzin & Lincoln, 1994).
- *Ethnomethodology* - This studies how people make sense of their everyday lives in order to produce behaviour that is socially acceptable (Denzin & Lincoln, 1994; Reber, 1985).
- *Symbolic interactionism* - The focus here is on the importance of meaning and interpretation, not just behaviour. People create meaning through interaction with others and the world; these become their reality (Denzin & Lincoln, 1994). The symbolic interaction approach stresses the crucial role of language in human behaviour. Behaviour is guided by rules and norms, but is not entirely determinable in advance (Strauss, 1969). Symbolic interactionism assumes that action depends on the meanings that people use to interpret their situations (Charmaz, 1994a). An example of symbolic interactionism is grounded theory, the method used in this research.
- *Ecological psychology* - This examines human behaviour in relation to the environment (Denzin & Lincoln, 1994).
- *Systems perspective* - A study into how a system functions as a whole (Denzin & Lincoln, 1994).
- *Chaos (or dynamical systems) theory* - An attempt to find underlying order in a seemingly disordered system, for example, weather and people’s behaviour (Denzin & Lincoln, 1994).

2.2.2.2 Concepts and Processes of Qualitative Methodologies

All of the above qualitative methodologies have common themes (Patton, 1990). These are as follows:

- *Naturalistic* - The researcher does not manipulate the situation. Researchers study naturally occurring phenomena.
- *Discovery orientated* - Qualitative researchers do not expect predetermined outcomes.
- *Inductive* - Research is open ended rather than involving deductive testing of theory-driven concepts. The emphasis is on exploration.
- *Holistic* - There is a belief that the complex system is more than just the sum of the parts.
- *Qualitative data* - The data is descriptive. The data directly examines the experience of people and often uses direct quotations.

- *Personal contact and insight* - There is direct contact with the participants and the context. The researcher's experiences, insights, and creativity are vital.
- *Dynamic systems* - The process involved in the research is the important factor, rather than solely the end result.
- *Unique cases* - This assumes each case is different. An examination is conducted of the details of each case, to identify variation.
- *Context sensitivity* - The context is identified and reported in relation to the area being studied.

2.2.2.3 History of Qualitative Research

In 1894, Dilthey suggested that a clear distinction should be drawn between natural science and human science. He thought that natural science could be carried out through observation of physical events, whereas human science should be a search for meaning or understanding (Henwood & Pidgeon, 1992). Qualitative methods are particularly useful in the human sciences (Patton, 1980). They are derived most directly from ethnography, anthropology, and sociology, but more generally from phenomenology, symbolic interactionism, naturalistic behaviourism, ethnomethodology, and ecological psychology (Patton, 1980). Qualitative methods have been used extensively over many years in areas such as medicine. For example, diagnosis using signs and symptoms has been developed over many years by doctors who noticed relationships between symptoms and illnesses and then taught this to others (Morse, 1994b). However, the discipline of psychology does not appear to place as much value on qualitative research as some other human sciences do (Henwood & Pidgeon, 1992).

2.2.2.4 Qualitative Methods

The methods of data collection and analysis of qualitative research are described below.

DATA COLLECTION

The research strategy for qualitative research differs from that for more structured quantitative research (Fontana & Frey, 1994). Qualitative methods are often incompletely or badly described. Procedures may not be rigorously followed, and techniques conveniently adapted according to need. This is itself is not necessarily problematic, but can be confusing for other researchers if the precise method used is not clearly described. In qualitative research, researchers may attempt to get close to the data rather than follow any set method (Altheide & Johnson, 1994). Qualitative research aims to develop theory, rather than test it. It tends to focus on description, explanation, and understanding (Morse, 1994b). Qualitative research often uses data gathered from unstructured interviews or observations. This data is not measured in terms of quantity, intensity, or frequency, and nothing is controlled or manipulated. Qualitative research attempts to understand naturally occurring phenomena (Denzin & Lincoln, 1994; Patton, 1980). This breaks what quantitative researchers regard as fundamental rules. For example, qualitative researchers may have close personal contact with the situation being studied and may answer questions asked by the participants and let personal feelings influence them. This

is very different from the, so-called, distant and rational quantitative researcher (Fontana & Frey, 1994; Patton, 1980). The qualitative researcher aims to gain trust and establish rapport and to see the situation from the participant's perspective. The relationship between researched and researcher is acknowledged, as is the context in which the research is situated (Denzin & Lincoln, 1994; Fontana & Frey, 1994). In qualitative research, variables are not controlled; this means that participants are not excluded from participation by being put into a control group (Morse, 1994b; Swanson & Chapman, 1994). The researcher might not develop a complete set of variables until the study is completed (Morse, 1994b). Qualitative research (and quantitative research) is restricted, as participants cannot report everything they know and further, a researcher cannot report on everything learned. As a result, the participants' experience is often different from the words that authors use to articulate that experience (Altheide & Johnson, 1994).

Data collection in qualitative research is open-ended and detailed. It can be verbal, written, or visual. It is case-based, examining the specifics of particular cases. This is very different from quantitative data that is collected over a large number of subjects, within a small area of research. Qualitative methods strive to catch the meaning as opposed to measuring frequency. Data analysis, in addition to data collection, is also very different (Denzin & Lincoln, 1994; Henwood & Nicolson, 1995a; Smith, 1995; Van Maanen, 1979). Data analysis is discussed in the following section.

DATA ANALYSIS

In using qualitative data analysis methods, the investigator must be open to the participant's experiences and perspectives rather than forcing the data into pre-existing theoretical boxes (Denzin & Lincoln, 1994; Gillet, 1995). With qualitative analysis the goals are to search for meaning and understanding, and to explore and to be aware of multiple interpretations and meanings. Information is examined from the participant's frame of reference and point of view (Henwood & Pidgeon, 1995b; Patton, 1990). It is very important in qualitative research to view meaning and behaviour in context. This contrasts with quantitative research which frequently ignores context (Henwood & Pidgeon, 1992).

Qualitative research is usually described as inductive. It is also described as a combination of inductive and deductive, as well as abductive (Chamberlain, 1999; Haig, 1996; Noerager, 1994). It does not impose pre-existing expectations on the research situation, rather, categories emerge from open-ended questions and observations (Patton, 1980). Working hypotheses are generated from the data. This involves emergence of theory from data, rather than empirical facts confirming a prior theory. The move, with qualitative research, is always from data to theory (Henwood & Pidgeon, 1992). It is creative and interpretive (Denzin & Lincoln, 1994). However, qualitative data analysis is not magical; the theory does not simply emerge from the data. The researcher has to organise and work at interpreting the data. They cannot await some wonderful insight (Morse, 1994b, 1994a).

The process of qualitative research leads to the creation and linking of categories, falsification, and confirmation. The researcher needs to question and search for answers, actively collect and organise data, make the initially invisible obvious, decipher what is important and what is not, and organise

and link the non-obvious categories. This is done by guessing, verification, falsification, correction, modification, and continually collecting more data, then returning to the analysis in an attempt to identify missing areas and detect negative cases (Patton, 1980). This is in contrast to quantitative research, where the goal is to decide, before the research begins, what theory the research is based on, to know the variables that are being studied, and the expected relationships between them. In quantitative research the variables are then manipulated as part of the study (Patton, 1980).

The qualitative process continues until saturation of the theory is reached. Saturation occurs when there is an end to the categories that are found. However, some categories may be too sensitive to be discussed. It is often these areas which are the most revealing (Dreher, 1994). In qualitative research, hypothesis testing in its traditional statistical understanding is nonsensical. This arises because if a negative case exists, the hypothesis is amended to take this into account; consequently the updated hypothesis is always as accurate as data allows it to be. The hypothesis test is unnecessary as no data does not fit. Qualitative research is interpretative where, in working with the data, questions are both created and resolved (Van Maanen, 1979).

Compared with quantitative analysis qualitative data analysis often takes longer, is more detailed, and is more variable. It is usually not as systematic or standardised (Patton, 1990). There are no firm rules in qualitative data analysis, only guidelines. The researcher attempts to get close to the data, be factual, descriptive, and use quotes (Patton, 1990). The emphasis is always on process and meaning (Denzin & Lincoln, 1994). Description is only the first step of qualitative research. The aim of qualitative, and all scientific research, is to explain. Therefore, there is a need to link variables with each other and identify exceptions (Dreher, 1994). Qualitative research is based on the constant comparative method of continually going back to data, even when writing up (Smith, 1995). In qualitative research the researcher moves constantly between discovery and verification (Patton, 1980).

2.2.2.5 Credibility of Qualitative Research

The use of quantitative methods, that produce numerical data, is presumed to be objective and accurate (Altheide & Johnson, 1994). The product of qualitative research involves a dilemma when the validity of this research is measured against quantitative criteria. For example, reliability, validity, parsimony, empirical content, consistency, generality, and independence of the researcher and the researched, are all quantitative criteria (Henwood & Pidgeon, 1992). What is needed is a way of determining the value of qualitative research that is not based on quantitative criteria. It is important to note that the researcher is the research tool in qualitative research, so the research is only as good as the researcher, although this is also true for quantitative research (Leininger, 1994). Some (eg., Patton, 1990) argue that there may be a loss of rigour using qualitative methods, but there is often great increase in flexibility and insight. Validity measures the extent to which the truth is represented or captured. Green (1995) states that evidence suggests that verbal reports are valid. Survey data also share validity difficulties, as this type of data is also obtained initially by asking people what they think. What people say is not always identical, or even highly correlated with, what they do (Silverman, 1993). In these

situations, observation, often used in qualitative research, has an advantage, because these differences can be identified and discussed.

The acceptability of a theory is partially based on the way in which it was generated (Patton, 1980). Reporting the research method used is important for evaluating research (Altheide & Johnson, 1994). Much can be done to increase the likelihood of reporting qualitative research that is near to the "truth", for example, by discouraging participants from rationalising their thoughts (Green, 1995). Keeping close to the data is vital in qualitative research, as it is important that the emerging theory fits the data. Ensuring that the theory is integrated at many levels of abstraction and that it is rich and complex increases the usefulness of the research (Henwood & Pidgeon, 1992). Challenging initial assumptions, and modifying the theory where necessary can be helpful. A good theory should fit the data well, have diverse levels of abstraction, and be highly plausible (Henwood & Pidgeon, 1992).

In determining the validity of qualitative research, it is important to develop appropriate evaluative criteria, rather than attempting to use quantitative criteria. Qualitative researchers should not try to use criteria like validity and reliability in the quantitative sense. Qualitative and quantitative research have different goals, purposes, and philosophies (Leininger, 1994). There are several issues that contribute to the credibility of a qualitative study. These include the methods that are used to ensure accuracy (Patton, 1990). Qualitative research has a creative foundation, but it is also based on technical aspects, which are rigorous, systematic, and replicable (Patton, 1990). With qualitative research it is important to test rival or alternative explanations. The data needs to be examined with regards to its support for these alternative explanations and negative cases (Patton, 1980, 1990).

Triangulation provides another useful strategy for research, which can increase its credibility (Patton, 1980). Triangulation exists in a variety of forms: method, sources, analyst, and theory/perspective. Method triangulation involves collecting data by different methods, both qualitative and quantitative. Triangulation of sources involves the use of different data-sources within qualitative methods. For example, observation and interview can be used to examine the consistency of the participant's report over time, and for recurrent patterning over different contexts. With analyst triangulation, more than one person independently analyses the data, then the results are compared. Analyst triangulation can be seen as a subset of methodological triangulation, as the researcher is, amongst other things, an instrument. Theory/perspective triangulation is the interpretation of data from different perspectives or angles (Leininger, 1994; Patton, 1990; Silverman, 1993).

The credibility of qualitative research is partially dependent on the credibility of the researcher; this follows from the fact that the researcher is a research tool (Patton, 1980, 1990). Attention needs to be given to the perspective of the researcher and their relationship to the people or topic studied. Personal attributes may affect collection, analysis, and interpretation of the data (Dreher, 1994; Patton, 1990). The validity and reliability of qualitative research depends, in part, on the quality of the relationship between the researcher and the participants. Data findings represent a perspective rather than the "truth" (Patton, 1990). As Patton (1980) clearly states: "... all we can provide is perspective ... (it) is not arbitrary, nor is it predetermined, but it does fall short of being Truth" (p. 327).

Numerical results often give a false sense of precision and accuracy; they may well be unreliable,

invalid, or meaningless (Patton, 1980). Numbers do not protect against bias, rather, they may disguise it. Data analysed by statistical methods are also based on someone's definition and measurement of a construct; therefore, it is not necessarily objective (Patton, 1990). Although numbers do not protect against bias, they may help reduce bias (Dey, 1993).

Quantification often hides process. There are some areas of social interaction that statistics cannot accurately access (Silverman, 1993). Saturation is a useful qualitative concept that addresses this difficulty. It involves knowing an area thoroughly. This may occur through an exhaustive exploration that achieves redundancy, or the observation of the same or similar information repetitively (Leininger, 1994). Dey (1993) defines the saturation point as: "where all the relevant data have been incorporated into the analysis" (p. 268). Of course the difficulty is in determining what is "relevant" and whether in fact you have, or can ever, get it all.

Reliability is often used to measure the credibility of quantitative research. However, it is not simply an empirical issue; it is also a conceptual one. In qualitative research, researchers cannot expect others to closely replicate their research, however they at least need to explain how they arrived at their results. Others can then scrutinise the procedures and see if the results appear reliable (Dey, 1993). "Validity" is another term often used in quantitative research. This is also easily understood in qualitative terms. Qualitative research can be considered valid when it is well grounded, conceptually and empirically (Dey, 1993). Qualitative research can also be examined for face validity. Face validity refers to the fit between observations and concepts. This enables one to identify whether the report is believable and whether people relate to it. In addition, it measures whether the findings are in context (Patton, 1990). Noting and discussing negative, extreme, and borderline cases, in addition to positive ones, can further increase face validity. This is in addition to considering frequency of the data as well as content. Cross-referencing to other sources is also important (Dey, 1993). Qualitative research is grounded in data, increasing its face validity. Construct validity assesses the fit between the concepts in the current research and other research in the field. If constructs do not fit with established thinking, researchers need to accept a sterner test of their validity. However, lack of fit does not mean that the constructs are not valid (Dey, 1993). It may be that they are describing a different construct or the established thinking may not fit.

Qualitative researchers also need to be clear about representation and generalisation. Representation addresses the referent of the research (Dey, 1993). Dey (1993) addresses two types of generalisation: induction and application. Induction is a theoretical process of developing concepts and connections, which infers a general statement about specific data. Application, on the other hand, applies theory to a wider population. It applies a statement beyond the data on which it is based. Qualitative analysis usually provides a better basis for inferring generalisations than applying them. This is because qualitative analysis uses limited participants, for a thorough analysis. This provides a strong base for inference, but not necessarily application. Generalising to a general population may not be justified because of the small numbers and non-random selection of participants (Dey, 1993). It is important to report on the conditions under which generalisations may hold true. Qualitative research analysis is likely to be suggestive rather than conclusive, but if the inferences are well grounded in data the

researchers can be confident that the suggestions are worth pursuing (Dey, 1993). Henwood and Pidgeon (1992) suggest that transferability may be a more useful concept for qualitative research than generalisability. This suggests that the issue is where the results can be transferred to, rather than the quantitative concept of generalisation, which is usually used in a population sense.

Henwood and Pidgeon (1992) also use the criteria of fit and closeness to the data. By this they mean being clear about why data were labelled in certain ways. What was done, and why, needs to be documented. They suggest that “good theory should be rich, complex and dense, and integrated at diverse levels of generality” (p. 105), and that “since the goal is the elaboration of a conceptually rich, dense, and contextually grounded theory, there is no compunction to sample multiple cases where this would not extend or modify emerging theory” (p. 107). Instead they suggest that negative case analysis and theoretical sampling are important, because they help to challenge initial assumptions and categories.

In summary, the criteria for judging the credibility of qualitative research need to include some different criteria from those used for quantitative research. If qualitative research is judged by quantitative criteria it usually fails to meet these criteria. This is because qualitative research is based on different assumptions and addresses different issues than quantitative research does. These issues need to be clearly understood when judging each type of research.

2.2.2.6 Advantages and Disadvantages of Qualitative Research

An advantage of qualitative research is that the theory created is contextually sensitive, persuasive and relevant. It views meaning and behaviour in context (Henwood & Pidgeon, 1992). Qualitative methods give in-depth and detailed information that is not bound by predetermined factors. It allows the researcher’s audience to see the world as the participants see it (Patton, 1990). Qualitative research strategies give much information about a small number of people with great flexibility and insight, although with limited generalisability. They can also explain complex processes (Patton, 1990). Qualitative research is often applicable by practitioners, and does not require interpretation in order for the research to be useful in a practical way (Mullen & Reynolds, 1994).

One disadvantage of qualitative data analysis is that it generally takes longer and is more detailed than quantitative data analysis. It is often not as systematic or standardised. It has limited generalisability, because it is closely tied to the research context (Patton, 1990). With qualitative research, where the researcher is the instrument, there may be a loss of rigour, due to subjectivity (Patton, 1990).

2.2.2.7 Summary of Qualitative Research

Qualitative research can document complex psychological processes, integrate existing theory, examine patterns and differences across cases, and detail accounts of individuals in different situations with different problems. It adds to constructs already used in psychology and aids in the development of theory (Smith, 1995). With qualitative research, studies attempt to address and understand an area as a whole. There is a need to gain trust and establish rapport with the participants and to see the

situation from their perspective (Fontana & Frey, 1994). Qualitative research honours the participants by not generalising.

Qualitative method are often used in minor or exploratory role prior to quantitative research (Silverman, 1993). However, the use of qualitative research methods in their own right is becoming more prevalent. In addition, triangulation is becoming more commonly used to achieve better and broader results and to get an in-depth understanding (Denzin & Lincoln, 1994; Fontana & Frey, 1994). However, there are difficulties with mixing qualitative and quantitative research in the same study, and some researchers report that this violates the philosophy of both paradigms (eg., Leininger, 1994). Quantitative research has strict requirements and criteria that relate, for example, to sampling, eligibility for participation, and random assignment. This restricts the range and variation of the participants, an essential component for qualitative research. However, even with the above concerns, it has often been found that combining qualitative and quantitative methods can be advantageous (Swanson & Chapman, 1994).

2.2.3 SUMMARY AND CONCLUSIONS OF QUALITATIVE AND QUANTITATIVE METHODS

Table 2.1 summarises the differences between quantitative and qualitative methods.

QUANTITATIVE	QUALITATIVE
Experimental	Constructivist
Method controls and manipulates; uses testing for statistical significance	Inductive, theory emerges from the data, constant comparisons
Numerical data	Interviews, observations etc.
Examines a limited area	Examines a large area
Measures parts of areas	Holistic
Uses large numbers of subjects	Typically uses a small number of participants
Objective	Subjective
Tries to reduce and control variance	Variance valued and important
Reliability and validity dependent on standardised measures	Reliability and validity dependent on the ability of the researcher
Tests theory, answers questions	Creates and tests theory, answers and yields questions

Table 2.1: Overview of the Differences between Quantitative and Qualitative Methods

Some researchers in the discipline of psychology have attempted to find research strategies that are impersonal in order to be comparable to other sciences, such as physics or chemistry. For example, behaviourism. However, behaviour is very complex. As a result, psychologists examined the behaviour of simpler species, such as rats and pigeons. It was assumed that human behaviour was similar to that of these animals. Behaviour studied in this experimental way was only that which was simple and

predictable enough to be encompassed by this type of methodology. Another problem was that the behaviour was being studied in an extremely artificial setting. In addition, in psychology, unlike some other sciences, human subjects interact with the researcher. They try to make sense of the study, as it is being conducted. Human behaviour cannot be studied in isolation. Pure physiology or the physics of biology cannot adequately explain behaviour; they miss important structure and meaning (Gillett, 1995). Few people, at the current time, would say that exclusively using controlled experimental research is suitable or beneficial for the social sciences. It is becoming widely acknowledged that researchers should use methods that are applicable to the area they are studying (Silverman, 1993). Qualitative methods are sensitive to the subtlety of the person and the situation, factors that cannot be achieved with quantitative methods. The main issue concerning the relative merits of qualitative and quantitative research is what constitutes "warrantable knowledge" (Henwood & Pidgeon, 1992). Psychologists, in general, have, in the past, concentrated on verification or criticism of theory and neglected the creation of theory. Researchers need to create theory where existing theory is incomplete, inappropriate or non-existent (Henwood & Pidgeon, 1992, 1995b).

At the most basic level, qualitative and quantitative research strategies are very similar in that they are concerned with arranging and rearranging raw data (Denzin & Lincoln, 1994). As Dey (1993) concisely states: "it makes little sense, in my view, to emphasize one approach at the expense of the other" (p. 267). The choice of which methodology to use should be determined by which best fits the problem or area, or which is most useful or appropriate for answering the particular question. Neither qualitative nor quantitative research is more valid in itself (Henwood & Pidgeon, 1992, 1995b; Patton, 1990). Qualitative and quantitative methods add different qualities to research; they provide alternative, not mutually exclusive, methods (Patton, 1990). Using mixed methods and triangulation may strengthen research (Henwood & Pidgeon, 1992). Qualitative methods are useful for investigating human response when the complexity of the response makes it difficult for quantitative methods to identify the appropriate questions or even the relevant variables (Dreher, 1994). The main difference between qualitative and quantitative research is the emphasis of qualitative methods on theory generation from data rather than theory developed by prior assumptions (Patton, 1990).

There are several paradoxes in qualitative research. It aims to: use existing ideas but not prejudge data; to separate the data, but also analyse the whole; use data in context, but make comparisons; divide data into categories, but also look at how these are related; be comprehensive but selective; analyse and use singularities but also generalise; the research account needs to be accessible but also acceptable; and be rigorous, but creative (Dey, 1993). Apparently opposing approaches to research are really interdependent; numbers can help analyse meanings, categorising can lead to identifying the meaning of context, and patterns can help isolate and understand singularities (Dey, 1993).

2.3 GROUNDED THEORY

Grounded theory is one of many qualitative methods, although it is probably the best known. As such, it has many of the benefits and limitations previously discussed. It aims to create, as well as test, a theory, and to produce a theory that is explanatory and thorough, and which closely approximates

the reality on which it is based. At the same time, it aims to use a research method that is rigorous enough to make “good science”, and is free of some of the biases that can be present in research and the literature (Strauss & Corbin, 1990). Rennie, Phillips, and Quartaro (1988) suggest that the grounded theory approach “holds promise for psychology as a whole” (p. 140). Grounded theory has a set of procedures which can produce an accurate and applicable analysis of an area (Stern, 1980). It does not start with hypotheses, but rather with an area of concern (Christensen, 1995).

2.3.1 INTRODUCTION TO GROUNDED THEORY

Grounded theory is a scientific, qualitative method for producing a theory, where the researcher starts with an area of study and a theory gradually emerges in a systematic fashion. Grounded theory can produce research in areas that might otherwise be difficult to research. For example, grounded theory is a useful research method when the area to be studied has little existing research or is relatively new. Alternatively, this method can access obscure or involved details of an area, or examine the area from a different perspective than has previously been studied. With grounded theory, the theory created often transcends, organises and synthesises the existing literature if there is an abundance of literature in the area being studied (Glaser, 1992). Grounded theory aims to produce a theory that fits the area being studied, that is understandable to those working in the field, and is broad enough to be generalisable.

Research into chronic pain has tended to emphasise theory verification, rather than theory generation, and use hypothetico-deductive methods. Research in the chronic pain area has had a restricted emphasis on testing hypotheses. Thus, grounded theory, which emphasises theory creation, should be beneficial in this area. Grounded theory involves examining the area as a whole, rather than only selected parts that have already been deemed useful. When using grounded theory there is less likelihood of important information being overlooked. The theory that is developed with grounded theory describes a process, and therefore will be temporal in nature. The theory produced is different from description, in that its data is grouped into concepts that are organised according to relationships and themes.

Grounded theory is a method that has not been used in psychology until relatively recently (eg., Charmaz, 1994a; Rennie *et al.*, 1988). Like all new research methods, the practicality and usefulness of grounded theory for psychology has been questioned (eg., Christensen, 1995). One aspect that is often challenged is the generalisability of theory it produces. This is because the method is often based on the analysis of a small number of participants. However, findings from an individual are repeated across as many people as are needed before categories in the theory are fully saturated, and further data does not add to the theory. After the theory has been created, it can be tested with a new group of participants. Once the study has been completed, verification of the theory can, and should, occur. It is important to note that grounded theory does not aim for a theory that is fully generalisable in a quantitative sense. Grounded theory aims to specify conditions that influence the process, the action or interaction, and the associated consequences (Strauss & Corbin, 1990; Rennie *et al.*, 1988).

There is some discussion about whether the grounded theory method is inductive, deductive or ab-

ductive. It is generally thought of as inductive (eg., Noerager, 1994). Although Noerager (1994) also suggests that grounded theory method uses a combination of inductive and deductive approaches. It can be argued that it is in fact abductive. Haig and his colleagues (eg., Haig, 1996, 2000; Ward & Haig, 1997; Ward, Vertue, & Haig, 1999) have suggested that abductive inference is involved in the initial creation of a hypothesis as a form of explanation of the underlying cause. Theories created by abductive reasoning are educated guesses based on pertinent knowledge. The abductive method is involved in the detection and explanation of empirical phenomena. This is important as theories are usually created to explain phenomena not data (Haig, 1996). Abductive method is often problem orientated (Ward & Haig, 1997). Use of abductive method provides a logical and rational theory (Haig, 2000). This method clearly differentiates between data and phenomena. Data are reports and observations that are able to be perceived and serve as evidence for and help in the detection of phenomena. Phenomena are relatively general, stable, and recurrent (Ward *et al.*, 1999). This is consistent with the ground theory method. Haig (2000) suggests "...abductive procedures should be employed as methods of theory construction, both for the generation of explanatory theories and for [their] evaluation" (p. 293). Rennie (1998) suggested that abduction was primarily hypothesizing, induction was the testing of abductions, and deduction the demonstration of truth. Therefore new knowledge is abductive. Qualitative research involves a process of abduction and induction, especially through the constant comparative method (Rennie, 1998).

These differences in viewing grounded theory may be partially accounted for by the differences in the application of the grounded theory method. These may be related to the more recent differences between the Glaser and Strauss application of the grounded theory method (see Glaser (1992) for a critique of these differences). For example, Glaser (1992) stresses the importance of the researcher remembering that they are generating, not verifying, theory. However, (Charmaz, 1994a) suggests that discovery and verification are not separate stages in grounded theory, even though Glaser and Strauss (1967) contrast these two stages. Despite this discussion, the grounded theory method emphasises discovery and theory development rather than logical deductive reasoning and prior theoretical frameworks (Charmaz, 1994b).

Grounded theory is usually presented as having both positivistic and phenomenological roots. Using these approaches, Glaser and Strauss (1967) suggest that the grounded theory method allows categories, hypotheses, and the theory, to "emerge", with little emphasis on the role of the researcher, they also emphasise starting with data and the real world. However, (Charmaz, 1994a) suggests that viewing grounded theory solely in this way leads to confusion, and instead, the method should be viewed from a social constructionist viewpoint. This is where the researcher plays an active role throughout the research process, and the report is itself a social construction of the social constructions that are present in the data. With this viewpoint it is the construction that is important rather than the reality. This view can elicit a new look at existing concepts in a given area, including developing, refining, and revisiting them (Charmaz, 1994a). The grounded theory method can also be considered to belong to other epistemologies, such as the realist, contextualist and radical constructionist epistemologies (Madill *et al.*, 2000). The differences within and between these epistemologies can have an important impact on how grounded theory is viewed. For example, whether a naive, scientific,

or critical realist epistemology is upheld is dependent on how subjectivity is perceived and whether the researcher perceives data to be partly dependant on their beliefs and expectations (Madill *et al.*, 2000). This will also depend upon how the research is critiqued. Certainly grounded theory can easily be applied within a naive realist and a scientific realist framework (Madill *et al.*, 2000). This assumes that the grounded theory research is discovering pre-existing phenomena and relationships within the data. Using this approach, triangulation can be useful and can be used to assess reliability or consistency of meaning. Grounded theory using these approaches involves a certain amount of interpretative work and therefore is not criterion-referenced in the way a statistical test may be (Madill *et al.*, 2000). If researchers are working under a contextualist or radical constructionist epistemology, they are more likely to reject objectivity and reliability criteria as they do not assume that there is one reality. The research is then considered to be context dependent (Madill *et al.*, 2000). As a result, triangulation is considered to give a more complete picture, not a more objective one. It is expected that different researchers will identify different codes using the same data, all of which are justifiable (Madill *et al.*, 2000). Using the radical constructionist framework the research is not considered to be perfectly replicable (Madill *et al.*, 2000). As a result, the epistemology that is underlying the use of grounded theory research will, to some extent, determine its use.

Grounded theory differs from other methodologies in several ways. The conceptual framework is developed from data rather than from previous research, although previous studies influence the final presentation. The emphasis is on process. Each piece of data is compared with other pieces of data, rather than comparing totals. Data collection is modified as the theory is created. Several research processes (such as data collection and analysis) occur simultaneously (Noerager, 1994).

The research processes that comprise grounded theory are fairly standard, however they are named differently by different authors. For most of this section, the method will be described using the language of Glaser and Strauss (eg., Glaser, 1992; Glaser & Strauss, 1967; Strauss & Corbin, 1990). However, other authors have used slightly different language for very similar processes. For example, Noerager (1994) uses the terms data collection, concept formation, concept development, concept modification and integration, and presentation of the results. On the other hand, Glaser and Strauss (eg., Glaser, 1992; Glaser & Strauss, 1967; Strauss & Corbin, 1990) use terms such as open coding, axial coding, selective coding, and theoretical sampling for similar processes.

Unlike some other research methods, the data for grounded theory is not collected in vast amounts before analysis begins; rather, it is collected as analysis continues. The emerging theory, and the process of conducting the analysis, shape data collection. Recurrent themes are followed up, which may lead the researcher in previously unanticipated directions. Researchers conducting grounded theory usually begin with general questions about an area rather than starting with pre-conceived hypotheses. If the general questions become irrelevant new ones are developed which follow from the data. Later in the process, sampling can be done theoretically, where data is collected specifically to address theoretical or emerging categories (Charmaz, 1994a).

Grounded theory produces rich data, elaborated categories and dense analyses that can be applied across several areas. The grounded theory method does not produce statistically verified results, al-

though its theories may later be verified with statistical methods (Charmaz, 1994a). Grounded theory method was developed when qualitative methods needed to become more rigorous and produce more than merely description. It focussed on describing process rather than obtaining a statistically significant result (Charmaz, 1994a). A major strength of grounded theory is its open-endedness and flexibility; this is because data collection and analysis occur simultaneously. Previously coded interviews or data can be revisited as the theory emerges, and different questions built into further interviews or data collection. Coding for processes, actions, and consequences, rather than topics leads to greater analytic precision. Researchers using grounded theory affirm, check, and refine their developing ideas, but importantly, they do not limit themselves to preconceived ideas (Charmaz, 1994a).

2.3.2 HISTORY OF GROUNDED THEORY

In 1967 Glaser and Strauss published a book titled "The Discovery of Grounded Theory" in which they presented a method for developing theory that was grounded in data. They initially applied the grounded theory method to studying dying people. Since that time, many other researchers have used their method, across many areas and disciplines. Although the grounded theory method has not changed markedly over the years from that that originally developed by both Glaser and Strauss, Glaser and Strauss themselves have independently developed the method somewhat differently over time (Glaser, 1992). Glaser and Strauss, the originators of grounded theory, now disagree on some aspects of the method. Some of these differences and criticisms are described below.

Strauss and Corbin (eg., Strauss & Corbin, 1990) suggest that grounded theory is more verifical than Glaser's interpretation of it. In fact Glaser (1992) suggests that Strauss and Corbin are no longer doing grounded theory with their verifical analysis. Glaser (eg., Glaser, 1992) criticises Strauss' method of grounded theory (eg., Strauss & Corbin, 1990) saying that it is verifical and forces the data into a theory, and thus has diverged from the goal of the original grounded theory method. Strauss, according to Glaser (1992), has no trust in emergence and forces the data. Glaser (1992) also says that Strauss' idea of process forces the data, as the research is conducted using some structure to assist in the process of research, rather than waiting for the theory to naturally emerge. Glaser and Strauss make slightly different use of memos. Memos form the basis of Glaser's theory creation (eg., Glaser, 1992). However, Strauss places less emphasis on memos and more emphasis on the emerging categories and the relationships between them to create the theory (eg., Strauss & Corbin, 1990).

Rennie (1998) suggest that Strauss and Corbin have made four main modifications to the grounded theory method. First, the researcher's experiences are considered legitimate data. Second, subsequent data can be examined for hypotheses which have not been specifically derived from the initial data. Third, consideration of conditions influencing phenomena are not limited to those specifically indicated by the data. This is most clearly indicated by the use of a conditional matrix. Fourth, is the importance of process, with Strauss and Corbin emphasizing the need for all categories to be processual. Another major difference is the use of verification which Strauss and Corbin endorse, compared to the validation, that Glaser suggests. Glaser (eg., Glaser, 1992) is also very critical of these changes to the grounded theory method that he and Strauss initially suggested. Although the

present research is based primarily on the Strauss and Corbin method, these additional modifications and alternative emphases were not used, and therefore have not been discussed. The appeal of the Strauss and Corbin version comes from its simplicity, procedural structure and verifiability (Rennie, 1998). It is consistent with the broad positivistic climate in psychology. Glaser's process is looser (Rennie, 1998).

Strauss and Corbin endorse instrumentalism to introduce a method that has hypothetico-deductive aspects. Strauss and Corbin suggests that verification involves a combination of induction and deduction. Glaser, on the other hand, does not tie the grounded theory method to instrumentalism, and sees it as purely inductive (Rennie, 1998). This is perhaps unsurprising as Strauss comes from a symbolic interactionism perspective and Glaser comes from a different background in discovery orientated quantitative sociology (Rennie, 1998).

Many other researchers have used grounded theory, initially in the disciplines of nursing and sociology, however, its use quickly spread to other disciplines. Every researcher who uses grounded theory is likely to use a slightly different variation (Charmaz, 1994b). However, they will use the same fundamental strategies of discovering and analysing processes, engaging in data collection simultaneously with data analysis, and using theoretical sampling to saturate categories. Their process will be aimed at theory development rather than the verification of a pre-existing theory (Charmaz, 1994b). The theory created can remain at the substantive level or can be exposed to further conceptualisation and abstraction to develop formal theory. The latter requires sampling of a variety of different groups and concepts (Charmaz, 1994b).

Despite these differences, both Strauss and Glaser still agree on major aspects of grounded theory method. They agree that: the goal is to develop data driven theory; data is collected and analysed simultaneously; constant comparison is used to reduce the complexity of the data by conceptualising what they have in common; these are represented by codes and categories; the relationship between these are noted; the categories are conceptualized into higher-order categories with increasing abstraction, with the aim of developing a core category; when it is judged that new data add no new meaning saturation is reached; generalisability can be addressed by theoretical sampling; and memos are important to reduce biases. In addition, it is understood that the analysis reflects the perspective of the researcher (Rennie, 1998). Rennie (1998) sums this up by stating: "Glaser and Strauss created something that is more profound than either seems to have realized" (p. 114).

The following description of grounded theory method is mainly based on the work of Strauss and Corbin (1990) and Rennie *et al.* (1988). As discussed above, this is quite similar to that of Glaser (eg., Glaser & Strauss, 1971; Glaser, 1992, 1994). Some of the techniques, such as the conditional matrix, which Glaser (1992) describes as "forcing" the data were not used in this study, and therefore are not described.

2.3.3 GROUNDED THEORY - THE METHOD

The processes of collecting and analysing data are tightly interwoven and occur on an alternating basis of collection, then analysis, then returning again to collection. The analysis of the data guides

decisions about what further data needs to be collected. This is often known as “constant comparison” (Strauss & Corbin, 1990; Rennie *et al.*, 1988). This is a parallel and iterative process with many of the processes occurring simultaneously and repetitively.

OVERVIEW

Grounded theory provides a specific method to categorise and code data. The data are separated into “meaning units”, which are placed into “categories”. It is important that the researcher “memos” (notes) his or her ideas, as there is little theorising until patterns are actually seen in the data. Early in the process, the categories that are generated are fairly descriptive, and based on the language of the participants. Each meaning unit is placed into as many categories as possible. Or if the information does not fit into any of the existing categories, a new category is created. This is named “open categorising” (Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

Later, categories are constructed which are not purely descriptive. The resulting theory is a combination of descriptive and constructed categories. Eventually, the researcher will find no new categories appearing. This is when “saturation” has occurred. The memos created by the researcher are important in many ways as they encourage the researcher to search and question beyond the actual pieces of data that he or she is examining and ponder the relationships between categories, what the categories actually involve and mean, or what further data might be useful. As further data collection continues, the researcher might use different types of people, or people in different situations. They are also invaluable when constructing the theory (Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

Once the categories have been saturated, researchers must direct their attention to examining the relationships between categories. Some categories stand out as central or “core” due to their relationships with other categories. Others become lower order categories that are not linked to as many other categories, whilst some categories are collapsed or combined with others (Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988). There is a constant movement between the data and the categories. As categories emerge, the data and memos are re-examined to determine how they better fit together. In the end, a picture emerges and the theory can be constructed. Thus, grounded theory is very labour intensive, especially in the earlier stages (Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988). Once the theory is generated, the researcher should examine the pre-existing theories and compare and contrast them with the theory he or she has created. If the pre-existing theories fit with the newly created theory, they can be integrated into it, enhancing the theory (Strauss & Corbin, 1990; Rennie *et al.*, 1988). Grounded theory produces a theory that can be verified by other types of research (Charmaz, 1994b).

OPEN CODING

Coding is the initial phase of data analysis. It is a process of sorting and categorising the data which allows it to be organised. Codes can range from the simple and concrete to the conceptual and abstract. Codes are developed from data. Codes summarise and sort data and are organised together into categories. The codes are created to fit the data. They form conceptual categories when they are

developed analytically and their properties are carefully defined. Researchers using grounded theory code for process, searching for patterns, consequences, and participants' assumptions (Charmaz, 1994b).

There are two basic procedures in coding: making comparisons and asking questions. Researchers begin analysing data as soon as collection begins. They will continue to collect the data throughout the grounded theory process. The researchers initially conceptualise the data; they break the data into "meaning units", which are discrete events, incidents or thoughts. Once researchers have identified the events or ideas, these concepts need to be grouped into categories. This is called "categorising" (Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988). In categorising, the data is coded and compared to other data and assigned to categories as they fit and appear to cluster together (Noerager, 1994). The naming of a category is important in many ways, because it must relate what it is trying to represent. The name must be logical, so the researchers know what the category represents, but it must be more abstract than the information it portrays. Often the names will come from the words that the participants use (Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

Characteristics or properties of a category are important. The researcher needs to know the general and specific properties of a category. General properties are present regardless of varying conditions. Specific properties are present only under certain conditions (Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988). A category stands by itself as a conceptual element of the theory, however a property is a conceptual element of a category. Additional data does not create evidence to destroy a category or property, but may clarify or modify it (Glaser & Strauss, 1971).

Open coding can be done, either line-by-line, or for each sentence or paragraph, or even for an entire document. Regardless of this, the questions that are asked are the same: What is the major idea? What is happening here? What is going on? How is this different from, or similar to, the extracts that have been previously coded? (Glaser, 1992; Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988). Examining the data for process is important in open coding (Charmaz, 1994b; Noerager, 1994). This initial phase of coding is often done line-by-line. The second phase of coding is more focussed. Focussed coding involves the researcher developing categories rather than just labelling topics; thus it is more selective and conceptual. Frequently, previous data is revisited in light of new categories (Charmaz, 1994b).

The data for this type of coding is collected by "open sampling". Open sampling is general rather than specific, because open coding is aiming for discovery. Interviews should not be too rigidly structured at this stage, although they will become more structured as the research progresses. Researchers should be asking questions of the data as they collect it. These questions can be added to further interviews (Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988). Data collection and analysis occur simultaneously; data collection is shaped by the analysis, and emerging ideas are checked by additional data collection.

Even though grounded theory researchers bring with them their ideas, experience and expertise, this method necessitates that researchers examine the data. Sometimes neither the research topic nor the researcher's ideas are related to data that is collected. In these cases the researcher either needs to

change the topic of research or his or her ideas, or collect different data (Charmaz, 1994b).

AXIAL CODING

Open coding separates the data so the researcher can identify the categories present. Axial coding puts it back together by creating links between the categories. Axial coding examines, not so much the specific events or incidents that happen, or even the specific properties or dimensions of the area in study, but rather the relationship between one category and another. Open and axial coding are not completely distinct and should not be kept separated. The researcher should constantly alternate between the two methods of coding when examining data (Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988):

While questions are being asked about the relationships between the categories additional processes need to occur. The hypotheses that are formed must be continuously compared with the data to identify evidence that supports, or fails to support, the researcher's thoughts and questions. The categories should be continually examined for properties and variations in the data. It is just as important to find that the researcher's questions are different from those portrayed by the data, as it is to find that the questions are confirmed by the data, because this adds depth to the theory. This variation is the heart of grounded theory. This variation also allows the theory to be applied to many different situations (Strauss & Corbin, 1990; Rennie *et al.*, 1988).

The data collected for axial coding is by relational or variational sampling. The intention is to add variation while finding and developing the categories that emerged at the open coding stage. Researchers need to search for data that supports and does not support the relationships that they are proposing. The aim is to attempt to find as many differences or variations as possible at the dimensional level (Glaser, 1992; Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988). It is also important to note what the participants do not tell the researcher as well as what they do (Charmaz, 1994b).

USE OF LITERATURE

After developing focussed codes, researchers may use the literature to clarify or expand these codes and explore other ways of examining the data. As a result, the literature helps to outline and compare meanings rather than force "correct" interpretations (Charmaz, 1994b).

In quantitative or verifical research, the literature is extensively examined in order to ascertain hypotheses to test and gaps to fill. With grounded theory research the literature in the area of study is not examined prior to the research (Glaser, 1992). This is because the aim is not to contaminate ideas and concepts found in the data with ideas previously discussed in the literature. This prevents preconceived ideas that do not fit the data. After the researcher has started coding and generating a core variable, and the categories have begun to develop properties, it is important that the researcher begins to review the literature in the related area. The literature is used to support the theory, rather than the theory being derived from the literature (Noerager, 1994). Researching back into existent theory can guide questions, increase conceptual depth and ground the research within the discipline

(Charmaz, 1994a; Christensen, 1995). Charmaz (1994a) does not believe that this contradicts the grounded theory approach, as the literature is not used to shape grounded theory researcher's ideas. As Charmaz (1994a) stressed, it is important to delay the literature review when doing grounded theory, but not to overlook it.

SELECTIVE CODING

The five steps that are covered in selective coding are: creating the structure or "story line"; relating subsidiary categories to the core category; relating the categories at the dimensional level; checking the validity of the relationship against the data; and finally, filling the gaps in the categories (Glaser, 1992; Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

Prior to selective coding the researcher may have undertaken both open and axial coding for some time, although the information may still not resemble a theory. Further integration, similar to the work performed in the axial coding stage is needed, but at a higher level. At the beginning of selective coding, the data are in the form of categories that have been developed in terms of factors, such as properties, dimensions, and relationships in the axial coding phase. Relationships between the major categories should begin to emerge from the data, and the structure of the final theory begins to become clearer. This is the first step of selective coding, creating a structure or storyline. The next step in applying this method is to make sense of the memos and diagrams, and therefore the data. This develops a representation of reality that is grounded in the data. It is important to identify the main (or "core") category from other important categories. If there are two main categories or phenomena, then one must be chosen as the main category and the other is related to it as a subsidiary category. Alternatively, it may be necessary to develop two separate theories. The theory created by grounded theory should show action or change, however the core category itself does not necessarily have to do this. The theory needs to be created analytically, rather than purely descriptively (Glaser, 1992; Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

After identifying the structure, the second procedure in selective coding is to identify the properties of the core category, and then to relate other categories to it. These become subsidiary categories. If there is major difficulty in ordering the categories, it may be necessary to rework the structure to fit the data. The researcher's third step is to return again to the structure, to describe it and identify the relationships and patterns between the categories (Glaser, 1992; Strauss & Corbin, 1990; Rennie *et al.*, 1988). A tentative conceptual framework is generated, guided by the data. The researcher attempts to identify the main difficulties faced by the participants and how they deal with these (Noerager, 1994).

In the fourth step the researcher validates the theory against new data, in order to completely ground it. The main questions are of the form: "if ... then ...". These questions need to be re-examined with the new data. Although the theory probably will not fit every case, it must fit the majority of the data and generally fit. A best fit needs to be achieved, not necessarily an exact fit. Finally, it is important for the researcher to identify any detail that is missing in the categories. It may be necessary for the researcher to return to the source of the data for further data collection if there are gaps in the theory (Glaser, 1992; Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

Discriminate sampling collects the data for selective coding. This sampling fills in poorly developed categories and confirms relationships between the categories and checks the structure of the theory for accuracy. It is directed and deliberate. The researcher selects participants to interview with this purpose. Negative cases do not necessarily mean that the theory is wrong, but may suggest variation in the relevant part of the theory (Glaser, 1992; Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

PROCESS

Grounded theory is different from most theory generation in that it emphasizes the role of process, rather than creating a static theory that applies indiscriminately across time in an unchanged way. In grounded theory it is important to clearly identify the process that is present in the data.

It is important to note the actions or interactions that lead to change in a phenomenon. This should have become clear to the researcher in the above coding stages. However, it is particularly important to identify the process that occurs. Researchers should note the change in conditions over time, as well as why and how the actions or interactions changed. They should also note when the conditions stayed the same. The response that is made to the changing conditions, and the result of the response, should be noted. Researchers need to identify important aspects of the change, including whether the change happened rapidly or slowly, was planned or unplanned, and the direction of the change. The effect of the responses of the change on the next interaction should be recognised. The researchers should not just discuss the steps in a phenomenon change without examining the process that occurred. The reader should get a sense of the flow of events as time passes. When people examine an action or an interaction, they see it as a slice of time. It is important to remember that it has a past, a present and a future. This is the function of process (Glaser, 1992; Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

Process can be either progressive or non-progressive. Progressive process has defined stages or steps that the person moves through, either forward, backwards or sideways. The explanation consists of why the flow of the process is changed. However, non-progressive process is the process of keeping something constant. For example, keeping a person's chronic pain stable is often important, as are steps that are taken to achieve this (Glaser, 1992; Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

THEORETICAL (OR SELECTIVE) SAMPLING

The aim of this phase is to develop concepts and expand and densify the emerging theory. Theoretical sampling is used to saturate categories. It is the process of sampling areas that have become relevant to the theory that is being built. It is based on the theory being developed. This includes sampling of the data and literature. As categories become clearer they are compared to data to identify if they are central and to fill out the category properties. Additional data may be collected specifically for this purpose (Noerager, 1994). Theoretical sampling is different from initial sampling, because with the former the researcher has a clearer view of the research problem (Charmaz, 1994b). Theoretical

sampling is both inductive and deductive. Theoretical sampling is a deductive process as collecting more data tests the proposed categories or theory. Theoretical sampling can also be inductive if the data collected is used to elaborate categories (Noerager, 1994). Through theoretical sampling, dimensions of the categories are identified, expanded, and limited. The basic criterion for selecting comparison participants is their theoretical relevance in the development of the theory (Glaser, 1992; Glaser & Strauss, 1971; Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

THEORETICAL SATURATION

Saturation is very important. Unless the theory reaches saturation it will be inadequate. The theory has reached saturation when the following three conditions are met (Glaser, 1992; Strauss, 1987; Strauss & Corbin, 1990; Rennie *et al.*, 1988):

1. No new or relevant data emerge.
2. There is good category development, including variation and process.
3. The relationships between the categories are confirmed.

Computer software can help facilitate the mechanical tasks of qualitative research, but not the creative or conceptual tasks. Software assistance with the mechanical tasks can make it easier to reach saturation (Dey, 1993).

THEORETICAL SENSITIVITY

Theoretical sensitivity is the researcher's ability to identify important aspects of the data and to give these aspects meaning. This requires the researcher to look beneath the obvious and challenge assumptions. Theoretical sensitivity is to have insight into the data, to understand it, and to identify what is important. This insight can come from several different sources, each with its particular advantages and disadvantages. Some knowledge of the relevant literature often stimulates questions and may indicate populations to sample. Conversely, if a researcher becomes too familiar with the literature, it may prevent him or her from seeing anything other than what is expected (Glaser, 1992; Strauss & Corbin, 1990; Rennie *et al.*, 1988). Glaser placed so much importance on theoretical sensitivity he wrote a whole book on the topic (Glaser, 1978).

Use of the relevant literature may be most beneficial after the theory has been created. It provides a means to compare and contrast the created theory with previous research and may indicate new ways to interpret data. Reading the literature increases theoretical sensitivity; the more the researcher obtains ideas from the literature, the more sensitive he or she is to their data (Glaser, 1992). Professional experience can also be helpful. Experience in a particular field will make it easier for the researcher to move into the situation and quickly gain insight. This does have the disadvantage that the researcher may miss factors that have become routine. Personal experience provides another way of obtaining theoretical sensitivity. However, it is important for the researcher not to assume that everyone's experience is similar to his or her own. The most obvious source of theoretical sensitivity

is by actually going through the research process and coming into contact with data (Glaser, 1992; Strauss & Corbin, 1990; Rennie *et al.*, 1988).

MEMOS

Memos are written ideas about the data and the categories. Memoing is a process by which ideas generated by the data are written down during coding so that they are not forgotten. Memos are written throughout the research process and shape data-collection. Memos help build and fill out categories, thus creating depth. The memos are sorted and used in writing the theory (Charmaz, 1994b; Noerager, 1994).

Although both Strauss and Glaser stress the importance of writing and using memos, they suggest different uses of them in the theory-creation and writing process. Glaser (1992) suggests that it is from memos that the theory is created. Relevant memos are sorted to create the story outline. However Strauss (Strauss & Corbin, 1990) appears to place less importance on the memos in this phase, for him the theory is based more on the coding and categorising process.

WRITING

Because the discovery process also extends to writing and rewriting, this endeavour is a crucial part of the analytic process (Charmaz, 1994a). Strauss and Corbin (1990) suggest that writing needs to be conceptual, clear about the relationships among categories and consequences, and tell a clear analytic story. It is important that the information is structured (Glaser, 1992). Writing a grounded theory report can be different in some ways to writing a quantitative research report. Incidents and anecdotes can be used to reveal themes. A good story is like a journey; the evolution of the plot is as important as the final conclusion. The conclusion can only be reached and understood by travelling on the journey. But this does not mean that every step needs to be reconstructed. The report needs to have a balance between depth, detail, and breadth (Dey, 1993).

2.3.4 FORMAL VERSUS SUBSTANTIVE THEORY

Theory can be developed at many different levels. This can range from the purely descriptive to substantive to formal theory. Grounded theory includes all of these variations, although it is usually more than mere description (Chamberlain, 1999)

Grounded theory develops substantive theory “that fits the real world, works in predictions and explanations, is relevant to the people concerned and is readily modifiable” (Glaser, 1994, p. 268). Glaser and Strauss (1971) make a distinction between substantive and formal theory. Substantive theory, they suggest, is easier to generate than grounded formal theory. Formal theories may be generated by comparative analyses of multiple substantive areas. Data for grounded formal theory can come from empirical data, substantive theory, or a combination of both. Generating formal theory depends on prior research and theory-development in the area (Glaser & Strauss, 1971). Substantive theory is theory developed for a substantive or empirical area of inquiry. Formal theory is developed for a formal or conceptual area of inquiry. Both of these types of theories fall between working hypotheses

of a minor nature and grand theories, which are all inclusive (Glaser & Strauss, 1971). Substantive theories often become stepping-stones to the development of grounded formal theory (Glaser & Strauss, 1971). Formal theory guides substantive research, opens areas for thought and research, and modifies, extends and integrates other theories (Glaser & Strauss, 1971). Generation of grounded formal theory needs to fit the real world, be relevant, be easily modified, and work in predicting and explaining (Glaser & Strauss, 1971).

2.3.5 JUDGING GROUNDED THEORY

The criteria for judging grounded theory are similar to that discussed above in section 2.2.2.5 credibility of qualitative research. They depend, in part, on the epistemology used by the researchers. The criteria for examining the validity of grounded theory research includes the following: it is well grounded; it is understandable, believable and credible; people can relate to it; it is saturated; and it has fit, work, relevance, modifiability, and explanatory power (Chamberlain, 1999; Dey, 1993; Glaser, 1992, 1998; Leininger, 1994; Patton, 1990). A brief discussion of the concepts of generalisability, reliability and construct validity follows.

Grounded theory's generalisability is based on its ability to be easily modified, its fit, relevance, and workability (Glaser, 1992). If an existing grounded theory needs to be verified then this needs to be done by the researcher using rigorous verificational methods to test a few central hypotheses (Glaser, 1992). The aim of verificational studies is to generalise to a population. Mullen and Reynolds (1994) report that grounded theory meets the criterion of generality because it is based on diverse data and different areas. However, like any research process the skill of the application of the method is important (Glaser, 1992). Grounded theory specifically needs to demonstrate process and reach saturation (Dey, 1993; Leininger, 1994; Silverman, 1993). Reliability in grounded theory research means that the researcher needs to explain how they arrived at their results, allowing others to evaluate their methods (Dey, 1993). Negative data needs to be accounted for (Dey, 1993; Patton, 1990). Construct validity is important in that the theory can be related and compared to other theories in the same or a similar field (Dey, 1993). This is where it is essential to use existing literature. It is important to link one grounded theory study to other grounded theory studies, providing the existing theory makes good sense of the data and fits it well. Grounded theory studies are easily extended by other researchers (Glaser & Strauss, 1971).

Christensen (1995) suggests that some researchers have criticisms of grounded theory and she outlines some of these. These criticisms include premature closing due to time constraints, leading to a lack in the variation and range of codes and categories; and failing to find a core category, which leads to only a descriptive report. There is also the issue of how to maintain "detached closeness", which is part way between total objectivity and total involvement. Usually this criticism results due to a seeming lack of objectivity. This is often a criticism originating from a quantitative background. How closely the grounded theory approximates reality is also questioned. This is probably a question for all research. As with any study, data collection can be criticised as data is used to develop the theory.

2.3.6 SUMMARY OF GROUNDED THEORY

Grounded theory is a process for developing a theory that is based on data. It provides a rigorous method that creates a reliable and valid theory that is of practical use in its area. There are some verificational processes inherent in the grounded theory process, however, the theory once created can be further verified with quantitative as well as qualitative methods.

Glaser and Strauss' (1967) approach to generating grounded theory has been developed over a number of years. Grounded theories need to fit the real world, to be able to both predict and explain, and be relevant and readily modifiable. If data is applied to ungrounded theory, the theory dictates, thus forcing the data. Such a theory is not easily modified, because it requires systematic, conclusive proof, rather than a few incidents (Glaser & Strauss, 1971). Formulation of grounded theory can take different forms. The emphasis is on the theory as a process to be further developed and modified. When grounded theory is published it is still developing and it is presented as a work in progress (Glaser & Strauss, 1971). Applied social theory is realistic only when it is grounded so that it fits, works, is relevant and easily modified (Glaser & Strauss, 1971). As Glaser (1998) states: "trust grounded theory, it works!" (p. 254)

2.4 METHOD USED IN THIS STUDY

This section describes the specific method used in this study. First, the participants who were used in this study are described. Second, the procedures for collecting the data are outlined, and third, the procedures for analysing the data are described.

2.4.1 PARTICIPANTS

The participants in this study all self-identified as having had pain for a minimum of six months, a period which defined chronic pain. In addition, these participants were chosen so they fell into a "grey area" category. This meant that they had experienced an injury, illness, or disorder that was severe enough for it to be at least possible for them to have developed chronic pain. This feature bounded the bottom of the "grey area". An injury, illness or disorder of a severity that would not necessarily have developed into chronic pain bounded the top of the grey area. The severity of the injury, illness or disorder was somewhat arbitrarily defined, as it was based on the participants' report of health-professionals' responses. Most participants reported, without prompting, that the initial health-professional they consulted considered that their pain-producing event would not result in chronic pain, and that they would be quickly restored to a pain-free state. However, this obviously was not the outcome, given that one criterion for this study was that the participants were currently suffering from chronic pain.

Sixteen participants were formally interviewed. Each identified as being of Caucasian ethnicity. They had a mean age of 38 years, ranging from 15 to 63 years and 69% were female. The participants reported a range of pain-producing disorders, with many participants having more than one disorder. These included unknown origin, amputation, sinus disease, spondylosis, muscle tear, tendonitis, oc-

cupational overuse syndrome, inflamed nerves, inflamed muscles, muscle imbalance, fracture, bone chips, dislocations, carpal tunnel syndrome, swelling, arthritis, tennis elbow, and laceration. The pain was reported at the following sites: head, neck, chest, abdomen, shoulders, elbows, wrists, hands, knees, ankles, and feet. There were also many "unofficial" participants in this study who informally shared their experiences of chronic pain, or who asked about the research and said "that is exactly like me". While their experiences were not formally included in the development of this theory, these many individual experiences provided valuable confirming evidence for the proposed theory.

The participants were recruited through two methods: first, through a local, hospital-based pain clinic, and second, through "snowballing" or word of mouth. In the latter case, people known to the researcher nominated appropriate friends, family, and work colleagues. No members of the researcher's personal circle of friends, family, or work colleagues were interviewed. Only one person declined to participate after being informed about this study. This was a pain clinic patient who was telephoned, but who had not volunteered to participate. The participants were not randomly chosen; rather, they were chosen because they had specific qualities that required further exploration. For example, age, duration of chronic pain, or types of chronic pain.

2.4.2 PROCEDURE

Ethical approval was obtained from the University of Canterbury Human Ethics Committee and from the Southern Regional Health Authority Ethics Committee (Canterbury). See Appendix A.

Participants were initially contacted by telephone. The study and procedure were described to them. If they expressed an interest in participating, interviews were arranged. The interviews occurred either at the hospital pain clinic, or in the Psychology Department at the University of Canterbury. Travel costs were reimbursed with petrol vouchers.

At the first meeting, the procedure was again explained and discussed and an information sheet provided. Matters of confidentiality were clearly detailed. Each participant agreed to continue with the study, and written consent was obtained. The information sheet (see Appendix B) and consent form (see Appendix C) highlighted their ability to withdraw from this study at any stage without any negative effects. No participant chose to withdraw. These documents also outlined the procedure for managing any ensuing distress resulting from the interviews. This constituted a referral to another agency or back to the pain clinic staff, although at no time was this necessary for any participant. All of the interviews were audio taped. Usually, there was more than one interview with each participant. Each participant's interviews were conducted over a period of several weeks. The participants also completed a prospective diary, outlining pain and functioning, which was regularly posted back to the researcher.

The interviews were very open and unstructured covering very general predetermined areas together with any other issues that arose. First, the participants were asked to describe their lives immediately before acute pain-onset. The events, thoughts, behaviours, emotions and any treatment surrounding pain-onset and continuing until the present time were then discussed in detail. All the participants appeared to enjoy talking about their experiences and rapport was easily established. Very few par-

ticipants appeared to feel uneasy, even when describing the most intimate of their experiences. Only one participant stated that they did not want to talk about an incident in their childhood. This issue was not pursued. The areas that were covered were generally similar for each participant, although specifics differed as the theory was developed. As time progressed, the interviews included in-depth questioning about specific areas that came to form parts of the theory. This procedure gave the interviewer time to review the information already obtained and to feed this back to the participant, thus clarifying the relevant meanings.

After each interview, notes were taken on non-verbal observational information. The tapes were then transcribed by the researcher, including observational information (clearly marked as such), and non-word cues such as pauses and tone. This provided valuable information on ambiguous statements, such as when the participant clearly meant the opposite to the words they used in a jocular fashion. See section 1.2 in the introduction chapter, which discusses the measurement and memory of pain and a discussion of these factors.

2.4.3 DATA ANALYSIS

Data analysis was conducted using grounded theory procedures, primarily in accordance with the recommendations of Strauss (1987), Strauss and Corbin (1990) and Rennie *et al.* (1988), as discussed above in section 2.3.3. More specifically, the transcripts were broken down into "meaning units". These were placed into categories. New categories were created to capture new ideas. The computer program Qualitative Solutions and Research, Non-numerical Unstructured Data Indexing Searching and Theorising (QSR NUD.IST) was used to help organise the large volume of data, which spanned many different areas (Richards, Richards, McGalliard, & Sharrock, 1992). QSR NUD.IST has been used by other researchers in the mental health and psychology areas (eg., Gorely, Gordon, & Ford, 1994; Loxley, 2001). As interviews progressed, concepts were placed into existing categories or new categories were created. Movement was constantly made from data-collection to data-analysis in an iterative process. Continued questions arose which necessitated the choosing of different participants, depending on questions being raised. For example, participants with differing illnesses and injuries, differing lengths of time in chronic pain, differing ages of onset of chronic pain, and differing life-stages. A co-rater with some experience in the grounded theory method, but little experience in the chronic pain area, was involved in a small part of this coding. Ideas were continually discussed with this person and others. A constant comparison method was used, revisiting raw data when new questions were raised, and as the theory was created, to ascertain fit between the theory and the data.

To ease the management of the vast volumes of data from each participant, the data was divided into pre and post-pain-onset. The participants described their experiences this way, although this division may have been a function of the interviewing process. Categories were refined and modified in the light of incoming data, and many categories were collapsed, or combined under others, as core areas became clearer. Higher levels of conceptual categories were created as the research progressed. Features of these categories were described and relationships among them established and modified over time and in constant comparison with the data. Thus, the final theory represented and incorporated

the data. This was not a stepwise progression through the process, but rather a continual oscillation between these different stages. Memos of ideas were kept.

The researcher, using interviews and transcripts not already included in creating the theory, sought to verify the derived theory. Throughout this process, dialogue was maintained with a researcher with some experience in the grounded theory method, but limited experience in the chronic pain area. As the theory was developed, use was made of the relevant literature, both in the chronic pain area and in the many other areas that were found to be relevant as the theory emerged. The literature was again examined after the theory was completed and during the process of writing. As the theory neared its completion, it was discussed with additional chronic pain sufferers and health-professionals working in the chronic pain area, in order to ascertain its applicability.

2.5 OVERVIEW OF THE RESULTS AND DISCUSSION CHAPTERS

All of the information presented in the following Results chapter (chapter 3) are a direct result of data collected during interviews with the participants. The data was analysed using a grounded theory method. Discussion of the relevant literature related to the theory is presented in the Discussion chapter (chapter 4). Research using grounded theory methods is commonly presented with the results and discussion combined, however a decision was made not to attempt this with this thesis. This is because of the complexity of the theory presented and the need for a PhD thesis to clearly identify the unique individual contribution to research and clearly distinguish this from other sources of information. This decision was also made after reviewing other theses and published grounded theory studies and identifying many which presented their data separately from a discussion of its relevance to the general literature (eg., Dolieslager, 1999; Drummond, 1999; Lempert, 1997). The theory and information described is the end result of this grounded theory process. For ease of understanding, a pictorial theory will be presented before the constructs and examples are provided. However, it is important to understand that in the process of using grounded theory method, the pictorial models of the constructs were the final outcome of the process, not the beginning.

Rennie *et al.* (1988) suggest that saturation typically occurs after the analysis of 5-10 transcripts. In this study, saturation for many parts of the theory was quickly achieved. Interviews with other participants were used to verify the theory. This is not abnormal; other grounded theory studies have used small numbers of participants and reached saturation. For example, the following researchers have published grounded theory research using between eight and fourteen participants: Buchanan, Villagran, and Ragan (2002), Carrero, Peiro, and Salanova (2000), Haas (2002), Heifner (1993), Karlsen (1997), Kendall (1999), Rees and Hardy (2000) and Watson and Rennie (1994).

This study began by asking questions exploring the development of chronic pain. However, it soon became clear that the central concept was much wider than this. It included the maintenance of chronic pain and the role of suffering and functional disability, rather than purely pain. It became apparent that while sensory pain presented a difficulty to the participants, the real issue they were grappling with was the consequences of pain on their lives; that is functional disability, in addition to pain. Thus, the present theory is a model of the development and maintenance of chronic pain

and associated disability. The core category was also not anticipated at the beginning of the study. As the study progressed, the core category of attachment style appeared to directly or indirectly influence all aspects of the theory. Attachment style was initially apparent in its influence on the background / vulnerability factors. It continued to play an active role through the participants' beliefs and interactions with health-professionals and significant-others in the acute pain phase. As their pain developed and progressed to chronic pain, attachment style influenced how the pain was managed and maintained particularly through the role of implicit theories. The participants experiences were modelled as progressing through the various phases of the theory, passing through some sections many times, but each time taking a slightly different route.

Chapter 3

RESULTS

The results chapter of this thesis comprises of five main sections and a summary (section 3.6). The first section (3.1) presents an overview of the results and discusses the outline of the theory, particularly the chronological layout of the different sections of the theory. The first main section of the theory is presented in section 3.2, the background / vulnerability factors. The acute pain section presents the first six-months of pain, involving initial pain management behaviour (section 3.3). Pain and disability maintenance factors are the third part of the theory to be presented (section 3.4), followed by the management of chronic pain and disability section (3.5). Each section presents overviews of constructs which are followed by description, including quotations from the participants.

3.1 OVERVIEW OF RESULTS

For ease of description, the results chapter is broken into four sections. Figure 3.1 shows the relationship between these four sections. In reality, the phenomena in these sections are continuous with no obvious break between the sections. The first section covers the role of the background / vulnerability factors. The pain and disability maintenance factors encompass those factors in the lives of the participants that were not directly pain-related. However, these factors were found to influence the maintenance of chronic pain and disability. Together, the background / vulnerability and pain and disability maintenance factors influence the other two groups of factors, acute pain and management of chronic pain and disability, which are directly pain-related. The acute pain and management of chronic pain and disability factors again are nominally separated on the basis of time. The acute pain section presents factors influencing the development of pain from its onset through the first six months, which is the period used to define chronic pain in this study. This is section 3.3. The background / vulnerability factors lead directly and seamlessly into the pain and disability maintenance factors, as chronic pain develops. The pain and disability maintenance factors are presented in section 3.4. The final results section (section 3.5) addresses the management of chronic pain and disability. It leads directly from the acute pain section, beginning six months after pain-onset. Factors in this section influence, and are influenced by, the pain and disability maintenance factors.

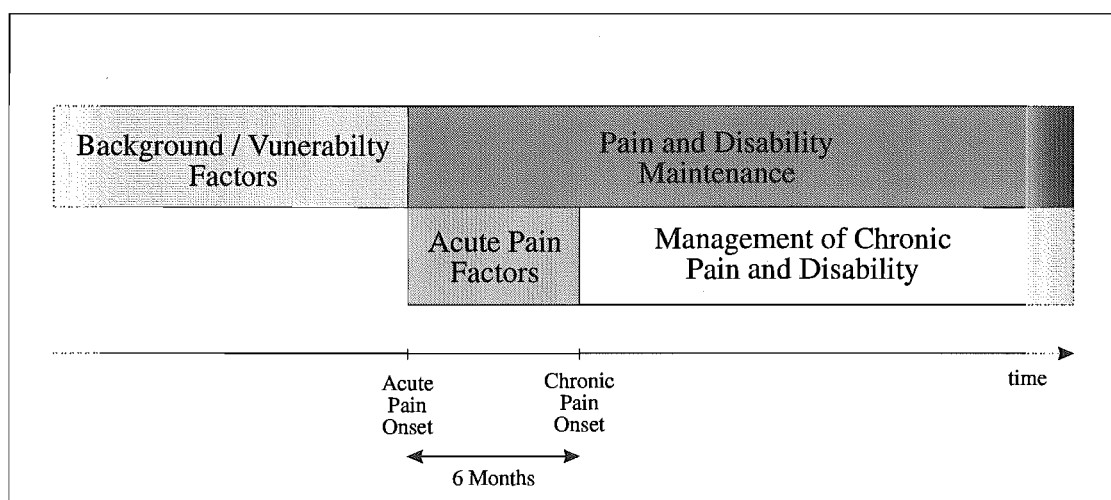


Figure 3.1: Overview of the Model of Development and Maintenance of Chronic Pain.

This figure shows the relationships of the four sections and where they fit on a time scale.

3.2 BACKGROUND / VULNERABILITY FACTORS

This section presents background factors in the participants' lives that may have contributed to their vulnerability to develop chronic pain. These factors are illustrated in figure 3.2, and are discussed below. The left-hand side of figure 3.2 represents the participants' view of themselves, and their view of others and the world. The participants' views of these form the concept of attachment. The participants' views are likely to affect and be affected by a range of other factors that the participants described in their background, prior to onset of pain. These are shown on the right hand side of the figure. They include isolation, social competence, communication, conflict resolution, and affect regulation. These factors constantly interacted with each other depending on the participants' experiences. They were modified as time progressed. A further factor found to contribute to the participants' vulnerability to develop chronic pain was their prior experience with illness and injury. This included the attitudes, beliefs and behaviours that they learned from their experience with both their own and others' illness and pain.

Each of the participants fitted somewhere along a series of continua, one for each of these identified factors. All of these placings can potentially increase or decrease a person's vulnerability to develop chronic pain and disability. It is proposed that those participants positioned towards the left of these individual continua, as shown in figure 3.2, are less likely to develop chronic pain and disability than those positioned closer to the right of the continua. Because all the participants in this study had developed chronic pain, the examples and descriptions below are positioned mostly on the right of these continua. These background factors are likely to have increased the participants' vulnerability for developing chronic pain.

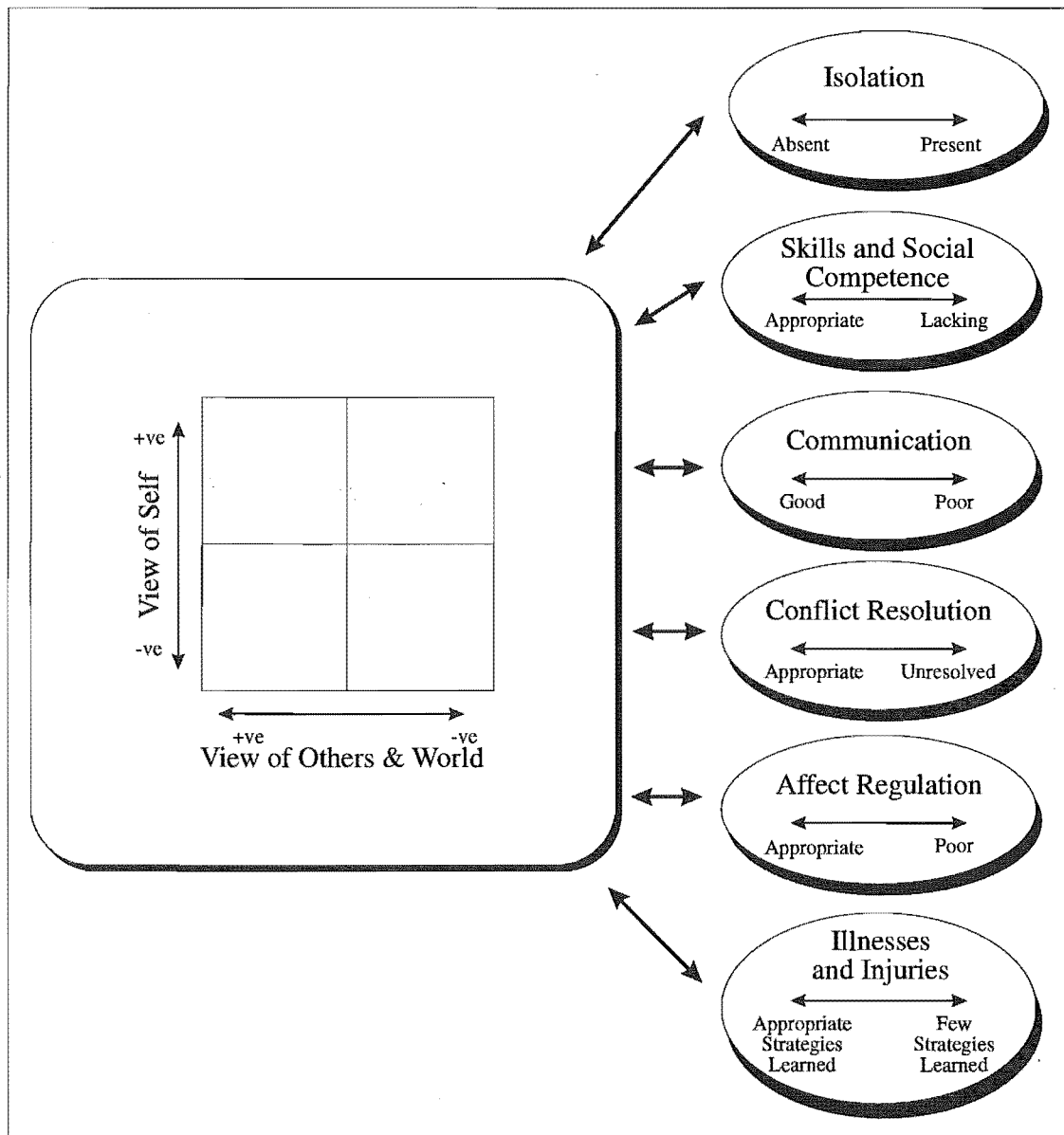


Figure 3.2: Model of Background / Vulnerability Factors.

This figure shows the background / vulnerability factors identified as contributing to the participants' vulnerability to develop chronic pain, prior to the participants developing pain.

3.2.1 VIEW OF OTHERS AND THE WORLD

Most of the participants described themselves as being very untrusting of others and believed that others could not, or would not, help or look after them. For example, one participant stated: *"if anyone had tried [showing they cared] I would have rejected it, that is right I would have totally rejected it"*. The participants recalled an absence of closeness and intimacy, both within their family and with their peers. For many, one or both of their parents were physically absent, sick or died during their childhood. For example, participants stated: *"my father had a job where he was travelling all the time"* and *"my mother died when I was [two and a half], she was always ill, she was always in hospital, so we were often, like I was off to boarding school by time I was two and a half"*. For other participants, their parents were at home, but were otherwise engaged, or the participants felt that they were not worthy enough to ask for their parents' attention. For example, one said: *"I thought that they had enough to cope with, with that [disruptive brother], that had been the case for several years"*. Many also talked about a lack of emotional closeness, or an emotional distance, between themselves and their parents. For example, participants stated: *"there was always an element of distance"* and *"I mean it is not a hug family or super close or anything like that"*. This method of interacting extended to their relationships with peers and partners and they often spoke about having few, if any, friends. If they did have friends they were not close. For example, one participant stated: *"I had lots of groups and I would be like a little sparrow, sort of flit from each one"*, thus, this participant avoided getting close to any of these people. Participants displayed a sense of needing the approval of others and often actively pursued that approval. For example, one participant stated: *"I was really looking for approval"*. However, the participants usually reported not obtaining the approval they were searching for. Often they felt that they were not good enough, or not as good as, other people. This appeared to be a global feeling rather than specific to particular situations.

Participants regularly described feeling abandoned. Sometimes, this was a reality with a parent being absent due to relationship issues, career, sickness or death. For example, two participants said: *"I would come home from school and my parents would still be off at their various jobs or what ever ... Mum and Dad just didn't have time"* and *"he has just become a stereotypical workaholic, you know, always out kind of thing"*. Sometimes, although present, the parents were too busy or otherwise too involved in other things that the participant felt they were emotionally absent. For example, participants stated: *"my reaction to [brother] was that he was getting attention by being bad so I went and took the opposite and tried to be good, extremely good in order to try ... she [mother] just didn't have room"* and *"I didn't get disapproval ... I was ignored ... totally ignored"*.

For some participants, negative life-events contributed to unstable living conditions. Some participants were cared for by relations or others, or they attended boarding school. Examples included: *"we came to New Zealand to live with my aunt and uncle"* and *"I lived at the convent ... we were either there or at someone else's"*. Other participants experienced less than ideal living situations due to other factors, such as finances. Examples of these included: *"I thought I was really hard done by, I came from a really poor family"*, *"we were all good cooks as kids and we all learned out of starvation"* and *"we were living on a very very low income, really we were very poor"*.

Nearly all the participants described a negative family life, an unhappy childhood, and reported that they had a negative living-situation. A typical example included: *"I didn't have a very happy childhood ... it wasn't very happy"*. Usually, they felt their emotional needs were not met. Often they reported poor interactions with siblings, for a variety of reasons. For some a large age-gap between themselves and their siblings was described as the reason for this. Examples included: *"my older brother and sister were at boarding school"*, *"we never really talked much"* and *"there was such a big age difference"*. Others described not relating well with their siblings in a more active way. One participant gave the example: *"my sister was considered very bossy ... we thought it was terrible"*. They also described difficulties with their parents. For example, participants stated: *"we sort of just exacerbated each other and increased the world between us"* and *"a lack of commonality with my parents ... it is a difference in the focus of life"*. The participants often described their parents as unhappy, or stated that they were very stressed. As an example one participant stated: *"my parents were under enormous stress financially"*. Another common difficulty was the hostile relationship between the participant's parents. Examples of this given by two participants included: *"it was just the constant battle between one and the other. It is very hard to sit in the same room when your mother is playing the piano with religious hymns at one end and your father is as drunk as a skunk at the other end"* and *"there was nothing but squabbling"*. Often, there were other difficulties, including involving immediate or extended family. One participant stated as an example: *"mum says now that it was the worst time in her life and she just went to bed every night in despair"*.

Very little emotional or physical involvement within the participants' families was reported. For example, two participants reported: *"my family are not very emotional, at least with each other, so it was really difficult for us"* and *"we have very little physical contact in our family"*. Many of the participants described feeling unable to talk to, or communicate with their parents and families when they were growing up. They described instances that symbolised this. For example, *"that is what I always thought stopped me, because whenever I did want to, say, go to mum or dad or something you know, [and say] 'worries me', she [sister] always got there first and ... I wouldn't interrupt"*.

Most participants reported having had strict rules when they were growing up. It appeared that many of the rules were general rules of families. Examples given by participants included: *"I mean, sometimes I thought that my friends were allowed to do a bit more than I was, but that never occurred to me that that was the age that I was just that some parents were stricter than others"* and *"I had a big birth mark ... I was allowed to put make up on it eventually"*. Other rules appeared to be less helpful, including unhelpful rules for social interaction, expressing emotion, physical contact and when a person deserved being looked-after. Again these appeared to be attributable to the participants relying on external factors, such as responses from other people, to regulate their behaviour, rather than having strong internal regulatory mechanisms. This continued throughout their childhood into their adult lives.

Many participants identified strongly with feeling responsible for their family. For many, this commenced at a very young age. For example, participants stated: *"I kind of had to, I held the family together"* and *"I was the only one left at home and I thought it was my responsibility to look after"*

them [parents]". This often involved a great sacrifice of time and adversely affected the activities they could participate in. This regularly led to a feeling of resentment. This resentment was not communicated to the family and it did not seem to change the participants' caring-behaviour.

In addition to having difficulties with communication, feeling responsible for keeping their families together, and with looking after their immediate family, the participants described mixed-feelings towards their families. Often they talked about these difficulties with specific examples for each family member, for example: *"in fact the thing that really got me was often, I remember two distinct birthdays when mum, my mother wouldn't even publicly say happy birthday she would say [whispering] 'happy birthday dear' and pass me a little parcel, almost as if she didn't want the rest of the family to know"*. Despite this, the participants did not reject their families and did not want the interviewer to think badly of their families. They often qualified their comments. One participant stated: *"I mean he is not as bad as some peoples' fathers that I know"*.

In summary, family was reported as playing a significant, and largely negative, influence in the participants' lives at an early stage. The participants described difficulties in trusting others. They were constantly seeking approval. If they did not perceive that they achieved this, they felt abandoned. They described a negative family and living environment with little emotional interaction or communication, and having to conform to seemingly strict rules. Despite this, many felt very responsible for their families. As a result, they had very ambivalent feelings towards their families and others.

3.2.2 VIEW OF SELF

The participants often described themselves, in their younger years, negatively. As an example, one participant stated: *"I was considered a bit grim"*. They identified themselves as having a very strong sense of what was right and wrong, and sticking to this rigidly. They also insisted that others adhere to this code of conduct. Examples of this provided by the participants are: *"self-critical ... I was extremely unforgiving of my own bad behaviour"*, *"I am my own hardest taskmaster"* and *"it was just my self-righteous sort of, this is how I think people should behave"*. The participants described others as being critical of them and internalising this as a child. This often related to their home life, but also included school, clubs, and hobbies. For example, one participant stated: *"I was in a situation that I was always put down and all the rest of my family were always better than me, always"*.

The participants reported seeing themselves in unidimensional terms. Typically, this related to one or two specific relationships or activities, including sport, family, or a hobby. Their thoughts relating to work often focussed on one specific career, not a range of options. One example included: *"I have always wanted to be a nurse ... something that I had been wanting to do ever since I was a little girl"*. Another participant speaking of her career and family, simply said: *"we are all musicians, we come from a musical family"* as if she had never contemplated any other option.

The participants often defined themselves relative to external things. These definitions were dependant on others, and how others might evaluate them. This meant that they sometimes denied their own needs in order to meet a belief related to others. For example, one participant stated: *"I was there to serve everybody"*.

Many participants reported feeling different from their peers and, as a consequence “not belonging”. They attributed this to qualities related to their parents, including their culture, ethnic background, intelligence, and education. For example, participants stated: “[in] a small country area you don’t belong unless you have been there for four generations and we had just moved there ... having educated parents sort of extended that” and “my father was black and my mother was whiter than white so there was always sort of a hassle”. Alternatively this difference was related to some aspect of themselves, even if they considered this to be a positive factor. As examples participants stated: “right through school I have been a year or more younger than everyone else” and “the top stream were the nerds”. The participants often internalised these differences as a negative part of themselves.

Many of the participants reported that from a young age they did not have the skills to manage their lives and their feelings. For example, one participant said: “I decided well, I have two options I can either become religious ... [or] topping myself”. This led to some reporting feeling stressed or depressed. Examples provided by the participants included: “I wonder if that was the stressy side of it, that caused it” and “at that stage I should have got help for clinical depression”.

Other peoples’ evaluation of them was an important issue for the participants. The participants were concerned about negative evaluation and expressed a strong need to present well, including during the research interviews. For example, two participants stated: “I don’t want to sound too vain ...” and “I don’t want anyone to get the impression that I was hard done by”. Some participants directly stated that they were a “good person”. For example, one participant reported: “I didn’t get into trouble, oh no I’m a good girl, I don’t get into trouble”. Most simply described aspects of themselves that indicated that they were a “good person”. Interestingly, some of these statements directly contradicted previous negative statements. For example, after describing many very negative aspects of his background, one participant said: “[I had] a wonderful childhood”. In addition, the participants made statements about themselves in relation to other people, that were consistent with their own beliefs about what constitutes a “good person”. These were modelled on their dichotomous ideas about who was good and bad. Examples of this are: “I had developed high moral standards” and “I was a really stoical kid, incredible stoical”.

Sometimes, the participants reported positive aspects of themselves. These statements usually illustrated interaction with others or the world that the participants believed showed they were a “good” person. This was probably related to their desire to present well. For example, participants stated: “I’m really feminist”, “I was quite competitive”, “I was neat and tidy even as a little kid” and “I was intensely reliable”. A common theme for many of these comments was that of independence and a lack of trust in others. Participants gave examples such as: “I would have said self-reliant, but no, because I am, I don’t know if self-reliant is right at all, trying to be so independent” and “I was so independent anyway”. Some of these beliefs appeared to be directly related to other people, and the participants’ need for closeness and avoidance of rejection. They regularly expressed the belief that they were not worthy or valued unless they were meeting the needs of others. Common themes for the participants were trying to please their parents, fear of placing demands on their parents, and intense fear of rejection from their parents. Examples of this included: “I then did my utmost to be the best

daughter, sister, child whatever I could possibly be”, “I didn’t make any demands on Mum and Dad so it was easy for them to come and say [participant’s name] that is wonderful you have cooked the dinner, I am so tired” and “I would, as an eleven or twelve year old, come home and get in a couple of barrow loads of wood and do a load of washing, um, cook the dinner etcetera etcetera etcetera and do anything else that needed to be done”.

Most of the participants reported enjoying particular aspects of their lives, including hobbies, music, and after-school work or sport. Typically they reported succeeding at to a high level at these activities. Examples given were: *“when I got home I was learning guitar and in the weekends I had a wee band going since year dot really”, “I played a lot of sport as well as playing musical instruments, tennis and netball”, “it is the element of speed that makes it [cycling] good fun”, “I started playing hockey at the end of primary school and I continued that I think until about fourth form, I liked anything to do with sport, I did a bit of cricket and tennis and all that” and “the school had a radio station, and you know I got very extensively involved in that”.*

In summary, participants mostly expressed a negative view of themselves. They exhibited perfectionistic ideals, which they attempted to live up to with little success. Their self-concept was simple, concrete, dichotomous and externally driven. They felt different from their peers and believed they lacked the skills to cope successfully. They struggled to see themselves as “good” people, however, in an attempt to avoid rejection, they worked hard to portray themselves well to others. Their lives appeared to be linked to the avoidance of punishment or criticism rather than seeking pleasure or joy. They appeared to be dependent on extrinsic rather than intrinsic rewards, and therefore constantly sought approval from others. These features were present from a young age.

3.2.3 ISOLATION

Many of the participants felt isolated from others. They reported having very few, if any, close friends. This particularly related to their peers, and also to their families as discussed above in section 3.2.1. They often expressed feeling different from their peers and reported choosing not to interact with them. Examples provided by the participants included: *“I never felt like I fitted in at all”, “at school I shut out my friends” and “I didn’t develop close friendships in the way you normally do where each person gets the same out of the thing and the friendship is mutual”.*

Some participants reported that they did not have time to socialise. For some this was forced upon them. For example, one participant stated: *“I was running Mum up to the hospital all the time, sometimes for six months at a time, every flaming day and at the weekends so there was no socialising”.* Others chose not to socialise, stating that they did not want to socialise. A common reason for this was that they had some other priority, such as work. For many it was because they found socialising difficult. For example, one participant said that as a young child: *“I didn’t really have a lot of time for social side of things because of my work, I was working too hard”.*

3.2.4 SKILLS AND SOCIAL COMPETENCY

All participants reported difficulties with social interactions. Particularly, they did not feel that they were socially accepted. Their interpersonal difficulties, poor skills, and low social-competence combined to effect their interaction with others. Many difficulties associated with social-competence are discussed elsewhere in this section under the headings of isolation (section 3.2.3), communication (section 3.2.5), and conflict resolution (section 3.2.6). Social competence is also discussed as part of the participants' view of themselves and others. It merits mention in this section as the participants spoke specifically about not having the necessary social-competency skills or needing to develop them. For example, one participant stated: *"I really do look forward to developing skills"*. They also described difficulties with social situations that led to them avoiding them. A typical example stated by a participant was: *"I didn't have so much of a social life"*.

3.2.5 COMMUNICATION

Most of the participants reported many difficulties with communication within their families. They claimed that they did not communicate, particularly about issues that were important to them, or about emotions. Many spoke of this being the responsibility of others or due to factors external to themselves. For example, participants said: *"she [mother] just doesn't know how to relate or what to do with me or how to help"* and *"which made it difficult for people to relate to me"*. Other participants described negative communication within their family, rather than a complete lack of communication. This is illustrated by: *"there was nothing but squabbling"*. Sometimes the participants reported that others in their family communicated well, but that they could not. An example of this is: *"I didn't talk much about it [depression] . . . she [sister] just wears her heart on her sleeve, she is wonderful"*. Communication became a particularly important issue for many of these participants. Some specifically chose jobs where they either did not have to communicate, or where the communication and social interaction was structured. For example, one participant talked about a fear of teaching children: *"I . . . thought that I don't want to spend my life with people that I can't communicate with on an intellectual level"*.

3.2.6 CONFLICT RESOLUTION

Most of the participants reported a large degree of conflict within their families of origin. For example, participants remarked: *"we sort of just exacerbated each other"* and *"that makes a bit of friction"*. They also identified that they did not have skills to resolve this conflict. Some participants saw conflict as a normal part of growing up. For example, they said: *"the major area of conflict with them [parents] was . . . I wanted to go out partying and they definitely didn't approve of that so, I don't think that is any different from anyone else"*, *"we used to argue until about thirteen or fourteen, I think that was just sibling rivalry"* and *"my brother and myself, because we were so close in ages, I think we always had a good rivalry, you know, always, and that exists today"*. The participants did not discuss learning any adaptive ways of resolving conflict.

3.2.7 AFFECT REGULATION

The participants described many difficulties with affect regulation. As has been previously discussed (in sections 3.2.5 and 3.2.6), they had trouble expressing their emotions and in resolving conflict. One way they managed this difficulty was by expressing their emotions physically. They also attempted to regulate their emotions by focussing on one part of their lives to the exclusion of everything else. They incorporated this specific activity as part of their self-schema. Often this activity was school and then work, although for a small number it was other activities, such as sport. Perfectionistic standards also became part of their self-schema and way of managing affect regulation. They often voiced a belief that if they did some particular thing, or everything, perfectly, they would be accepted, approved of, or loved and therefore happy. However, this frequently had the opposite effect, as the participants also held these standards for others to live by and this created distance rather than closeness, and lead to negative emotions which they had difficulty managing. This construct of affect regulation is discussed, and described with examples, in more detail below.

Difficulties with affect regulation, including somatisation and school refusal (refusing to attend school, with their parent's knowledge), were exacerbated through poor communication skills. The participants reported that they could only communicate their emotions physically, not verbally. For many of the participants, their only method of communication, as children, was through somatic complaints. An illustration of this was: *"they [chest pains] went away, um, I think that that was mostly psychological"*. These somatic complaints were often expressed as physical illness, which were used to facilitate school refusal. This was reported by nearly all participants, usually through boredom, anxiety, or other social aspects of school. Typical examples participants stated included: *"I got to high school and I hated it, I threw up, I was sick at home"* and *"eventually I started vomiting every morning before I went to school and mum would keep me home and then by ten-o'clock I would be fine again ... I was really, really bored in the classroom that I need to be more intellectually stimulated, that was why I was getting sick because I didn't want to go to school because I was so bored"*.

Despite their difficulty with social situations, most of the participants described themselves as academically competent. For some this appeared to have been a compensation for their social isolation and lack of social competence. This may have led to their self-esteem remaining intact. Two illustrations the participants used included: *"I had a very big vocabulary as a kid"* and *"I was a little wee book worm"*. Some participants specifically reported that they were intelligent. Others reported incidents or factors that indicated that they performed well academically. This was indicative of their attempt to present themselves well. Examples used by the participants included: *"I had ... better English as a six year old then my primary school teachers"*, *"I had an exceptional memory"* and *"my IQ was something like 170 odd"*. Many participants reported working very hard from an early age. The participants illustrated this by saying: *"I have also run my own business in the holidays"* and *"I got my first job after school at eight years old"*.

Academic performance was very important to the participants, both in terms of achievement and feelings of self-efficacy. It appeared to be an important part of their positive self-schema. Examples of these included: *"I was quite competitive, I did well at school, I always enjoyed winning prizes"*

and things", "school was never a problem for me at all" and "I have always done well academically without having to do any work". This enjoyment was related to the work that was required, rather than the social aspect of school or work. For example, one participant stated: "I quite enjoyed the classes and everything, but the culture at Girls High ...".

Perfectionist tendencies were common. They contributed to self-schema, feelings of efficacy, and the management of affect. Perfectionism was closely related to how the participants viewed themselves and others. Some participants actively described themselves as being a perfectionist, for example they stated: "oh yes, oh yes, very much a perfectionist" and "I was very much an idealist, I was very self-controlling ... I am going to enforce it on me before I enforce it on anybody else ... too driven, too perfectionist".

Psychological or emotional difficulties were commonly reported as present in the participants' families. For many this contributed much of their learning about emotional expression and regulation. Examples of these difficulties given by the participants included: "there is heaps of mental illness in my family ... my aunt and her daughter, my cousin are both alcoholics, and have been in and out of institutions, my cousin has tried to kill herself umpteen times ... there is heaps of that kind of stuff in my family" and "my older sister was plagued by depression, she saw a psychiatrist from about the age of 20, she died [from suicide] when she was almost 29".

3.2.8 ILLNESSES AND INJURIES

Most of the participants reported extensive experience with illnesses and injuries in their childhood. Typical examples of these included: "I did break my collar bone when I was, um, about five or six", "I had asthma as a child which necessitated being shot off to hospital in the middle of the night", "I ended up being very sick" and "I broke my left elbow". The outcome of these illnesses and injuries, and how they managed pain at this time contributed to their vulnerability to develop chronic pain in the future. For example, participants stated: "everybody seemed to have a different cure for them [headaches], but, I was pretty well looked after", "I would wrap it [knee] up, support and all that and just keep walking on it" and "away I would go to bed". Some reported having learned responses to pain and illness in their early childhood. For example, some participants remarked: "then I guess the response to the elbow pain was just, well the seed was already sown, and the same response to the elbow pain" and "I was a really stoical kid, incredible stoical". Many of the participants described rules governing pain-behaviours and what constituted legitimate needs. These rules were often unspoken within their families. As one participant said, the rules "included not complaining about pain".

A small minority of the participants described having no illnesses or injuries other than the one causing their chronic pain. They stated: "never a sick day, well a cough and a cold. Yeah never been sick", "Just the asthma, I had no other illnesses or injuries" and "I've never had anything wrong with me, never been to hospital, I haven't had mumps or measles or anything like that". However, they usually then described some non-trivial illness or injury, such as a broken bone or illness requiring hospitalisation.

3.2.9 OTHERS' PAIN AND ILLNESSES

Many of the participants were sensitised to illness at an early age. During their childhood their parents were frequently described as physically and/or emotionally absent due to illness. As a typical example, one participant stated: *"I have never known my dad well, he has got arterial sclerosis"*. It is likely that the participants modelled patterns of behaviour in reaction to pain and illness on their ill parents and significant others. It follows that they also learned attitudes and beliefs towards illness in this way. A common belief appeared to be that "needy" people were "bad". All participants, not surprisingly, had family members who had illnesses or injuries, and often commented on how others managed their illnesses. Examples given by the participants included: *"there were injuries certainly, like my sister got a dog bite when she was quite young and my older brother broke his wrist, um, my sister had an appendicitis that, um, was this close to bursting and was rushed off to hospital to have that removed so, [brother] had an eye operation, um, got poisoned and was rushed off to hospital etc"*, *"my mother is the complete opposite she is a really kind of stoic, you know, nothing affects me and there is no such thing as pain and you just have to get on with your life"* and *"Dad has quite a few problems with migraines and, part of the problem is actually blood pressure leading to stress ... he keeps his stress-levels down very poorly himself, he doesn't look after his health as well as he should"*.

Interestingly, the participants' attitudes to others' pain were regularly negative. They often assumed that the others were not actually in pain, or that others were portraying their pain as more intense or debilitating than it actually was. For example one participant stated: *"I don't accept illness, I see Mum and Dad [who are disabled by illness] and I just don't accept it. It's not that bad, it can never be that bad to me. So I just don't accept that and I never will"*.

A strong family history of chronic pain may have provided unhelpful modelling upon which the participants developed their beliefs and behaviours. Examples of pain in their family given by the participants included: *"my mother is completely riddled with arthritis ... my dad has got a very mild form"*, *"on my mother's side I have two aunts who, two of them are sisters, three of them I think have migraines and spend most of their lives in bed. Getting pain killing injections all the time"* and *"my sister ... she had a problem, I think it was an RSI problem. She had to have an operation on her elbow"*.

3.2.10 PATHWAYS THROUGH THE BACKGROUND / VULNERABILITY FACTORS

Having presented the constructs of the background / vulnerability factors, examples of these, and their effect on the participants, hypothetical paths through the model shown in figure 3.2 will now be discussed. The pathways highlight factors that may predispose a person to experience chronic pain at some future time. They show how childhood and background experiences contribute to chronic pain vulnerability. There are many pathways that an individual could take through the model, depending on their personal situation. Two hypothetical pathways are described below. These represent the extremes that exist. These pathways are not gender specific, however they will be discussed this way for ease of illustration.

The first pathway to be considered follows the left-hand side of the continua shown in figure 3.2. This hypothetical person would experience positive interactions with others and the world from a young age. These positive interactions would continue to develop as she grew older to include positive interactions with a range of people, including close friends. She would come to expect positive interactions from others and trust that others would be there to help her when she needed it. She would be confident asking for help. Her view of herself would be positive and she would believe that she could adaptively manage any situation she was presented with. Such a person would accept that at times things would not always be perfect. But she would be secure enough in herself that this would not present a major setback. She would have self-confidence in her ability to function in the world. There would be a wide range of skills and activities that brought her pleasure and she would be adaptable to change one or more of these as her situation changed. A hypothetical person following the left-hand side of these continua would have a low level of social isolation, have a wide range of friends, including close confidants, and feel secure in this. Her range of social-competency skills would leave her secure in her ability to function adaptively. She would have good communication and conflict-resolution skills. This allows her to meet her own needs while being respectful of others, thus preserving and strengthening future relationships. Her wide range of affect regulation skills would easily cover many different situations. This would allow her to be comfortable in feeling and expressing her emotions without resorting to rigid and sometimes unhelpful strategies to regulate her affect. This first hypothetical person would have had experienced illnesses and injuries, from which she learned adaptive skills. As a result, she would be confident in managing similar situations, even if the situation were disruptive. She would have developed adaptive beliefs, attitudes, and behaviours to pain and illness. Such a person would also have seen others respond adaptively to pain and illness. Further, others would have behaved adaptively when she was in pain or ill. A person travelling this pathway would have a low vulnerability to develop chronic pain. If she did develop a chronic, painful illness or injury she would have a low likelihood of becoming disabled by it. She would be most prepared to avoid the development and maintenance of chronic pain, even if injured or ill.

Someone positioned to the right-hand side of these continua would be in a very different situation with regards to their vulnerability to develop chronic pain. Such a hypothetical person would have experienced negative or inconsistent interactions with others. He would have had many negative life-events, which he felt unable to manage. He would have failed to learn adaptive and helpful skills to assist him in his interaction with others and the world. Instead he would live by rigid rules. He would not expect, or trust, that others would help him if he were in need. He would distrust his own ability to manage his life and interactions successfully. This would follow from his negative view of himself, his abilities, and skills. However, he would attempt to portray himself favourably to prevent rejection. As a result, there is a high chance that this person tracking down the right-hand side of these continua would be isolated, having few, if any, friends or close relationships. It is likely that he would be involved in only one activity, most probably work, from which he would derive most of his self-esteem. Social competency would be lacking, especially social-interaction skills, and particularly communication and conflict-resolution skills. He would tend not to resolve conflict, fearing rejection. In attempting to avoid conflict at all cost, he would become frustrated that his needs were not being

met. He would also experience difficulties communicating, in particular, he would not communicate much. Such a hypothetical person would struggle to express his emotions, leading him to attempt to express them physically. Affect regulation would be a difficulty, with the person having unhelpful beliefs about emotions. He would manage his affect maladaptively through rigid methods, attempting to be perfect at all times. Very long hours would be worked, with the person attempting to achieve to a higher level than others by hard work. His family would provide models of inappropriate affect regulation, with many of his family members themselves suffering from affect regulation difficulties and having emotional and substance-use disorders. Such a person would have suffered from illnesses and injuries while young. He would have learned that this was a method of getting his needs met, receiving attention, and being looked after. Many members of his family may have experienced pain or illnesses, which they would not have managed adaptively. This person would have learned maladaptive rather than adaptive responses to pain and illness. As a result, when faced with the onset of acute pain, he would have a high vulnerability to develop chronic pain and associated disability.

There are a multitude of other pathways through the background / vulnerability section of the model. Those further to the right of the continua are likely to predispose the person to develop chronic pain and a high level of disability.

3.2.11 SUMMARY OF THE BACKGROUND / VULNERABILITY FACTORS

This section has examined factors that were present in the participants' lives prior to the onset of their pain. Their beliefs and behaviours affected their interaction with others, including health-professionals, and their behaviour with respect to a later painful episode. When combined, these factors are likely to have predisposed the participants to develop chronic pain.

3.3 ACUTE PAIN

This section examines and models the period for the six-months following the onset of pain. This is the acute pain phase and is illustrated in figure 3.3. Many factors influence the pain experience during this phase. If the pain is still present six months post-onset it is considered to be chronic. The acute pain section builds on the background / vulnerability section (section 3.2). It occurs in parallel to the pain and disability maintenance section (section 3.4) and leads to the management of chronic pain and disability section (section 3.5). These relationships are illustrated in figure 3.1.

Prior to the initial onset of pain, individuals may possess vulnerability factors that predispose them to a long pain experience and ultimately chronic pain and disability. These background / vulnerability factors exist for each individual on a continuum from low through to high, based on their background. These factors were discussed in section 3.2. It is proposed that a person with a high level of background / vulnerability factors is more likely to develop chronic pain and associated disability, if other relevant factors are equal. Also influencing the progression over the first six-months are the impeding factors (section 3.3.9) and the participants' implicit theories (section 3.3.8). Implicit theories are the cognitive products, processes and schemas the participants hold with respect to pain and their past and ongoing experience. These are influenced by the background / vulnerability factors and are modified

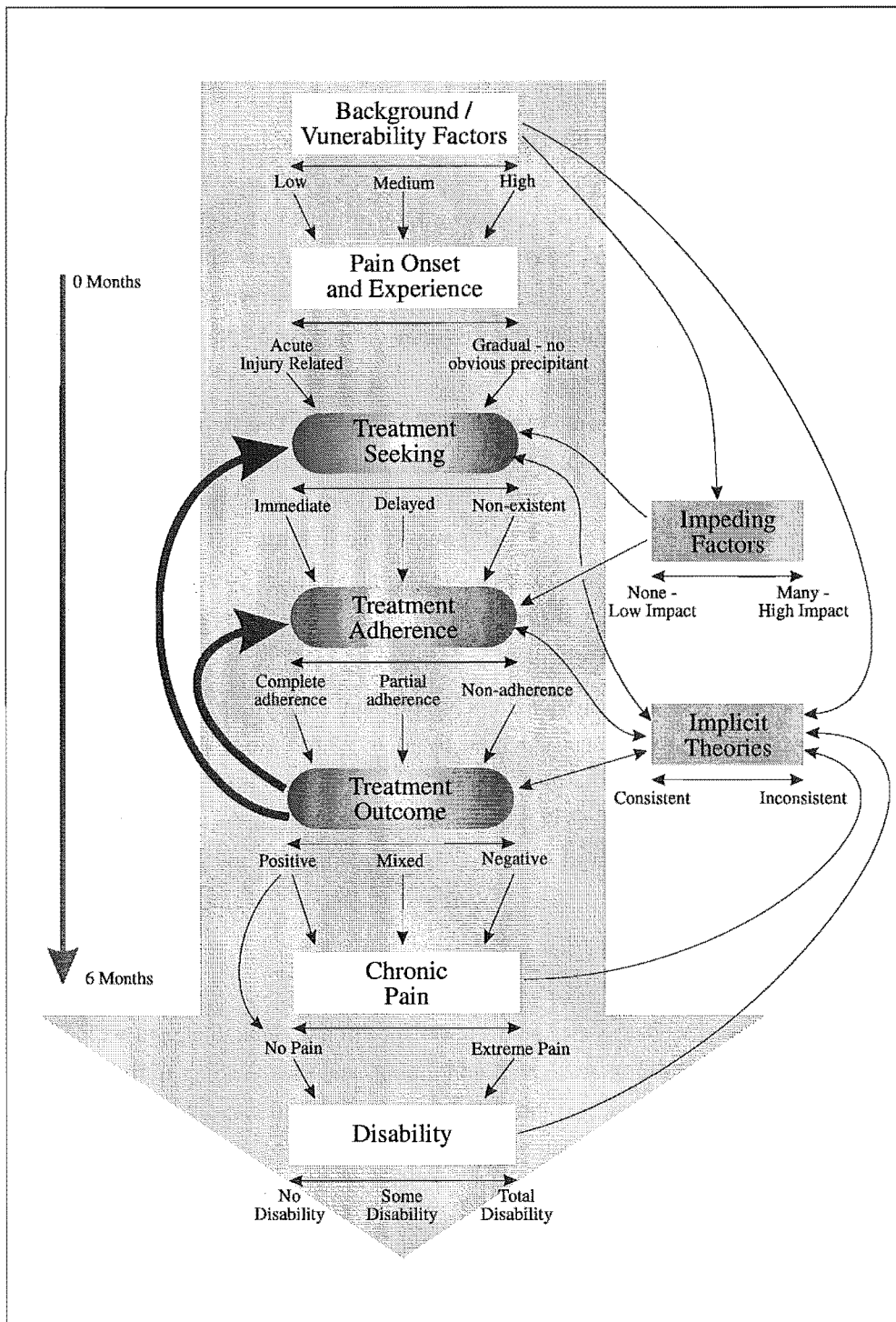


Figure 3.3: Acute Pain Factors.

This figure shows the six month process the participants took from the onset of acute pain through to the development of chronic pain. This figure has a feedback loop from treatment outcome to treatment seeking. Most participants passed through the feedback part of this section of the model many times.

as the participant progresses through the acute pain part of this model and has different experiences. The impeding factors and implicit theories influence many of the factors that make up the acute pain phase, and as such are conceptualised as being to one side of the model.

All participants, because they developed chronic pain, necessarily experienced an onset of pain or an initial pain experience. This pain-onset and experience (section 3.3.2) varied in its rapidity of onset, ranging from intense onset, usually due to an obvious injury, through to a gradual onset, which may have had no obvious precipitant. The pain may be either injury- or illness-related. Typically participants sought treatment for their pain. However, delays in seeking treatment ranged from immediate (no delay), through delayed, to no treatment being sought during the acute pain stage. Treatment seeking is discussed in section 3.3.3.

The degree to which the participants adhered to treatment also varied. This ranged from complete adherence, through partial adherence, to complete disregard of the suggestions of the treatment-provider. Treatment adherence is discussed in section 3.3.4. This varied not only across participants but also across time for each participant as they progressed around what is illustrated as the treatment feedback loop from treatment outcome (section 3.3.5) to treatment seeking. Treatment outcome ranged from a positive reduction in pain to a clearly negative outcome. Again, reports varied amongst the participants and over time for the same participant.

As this study included only those still experiencing chronic pain, no participant reported a pain-free recovery or completely pain-free treatment-outcome (section 3.3.6). However, it should be noted that some reported substantial reduction in pain as a result of treatment. Finally, associated with the experience of continued pain, there was a continuum of functional disability (section 3.3.7). These concepts will be discussed below followed by a description of them including quotation from the participants.

3.3.1 BACKGROUND / VULNERABILITY FACTORS

Background / vulnerability factors describe people's pre-disposition to think, feel, and act in ways that increase (or decrease) the likelihood of acute pain continuing, and thus, leading to the development of chronic pain. The acute pain process was intricately influenced at all stages by the existing background / vulnerability factors. These background / vulnerability factors were presented and discussed in detail in section 3.2.

In summary, the background / vulnerability factors were categorised according to their apparent effect, from low to high, in terms of the degree to which the factor enhanced the potential for the person to experience pain and for it to be maintained in the long-term. The background / vulnerability factors identified as being particularly important in the acute pain process were described in relation to treatment (both seeking and adhering to it) and the participants' interaction with health-professionals. These included aspects such as communication with others, particularly with health-professionals consulted, and aspects of the participants' cognitive style, including dichotomous and concrete thinking. Perfectionism and the participants' tendency to work "excessively" hard and overextend themselves, were also associated with increasing vulnerability and therefore the likelihood of developing

chronic pain. See section 3.2 for more details of these background / vulnerability factors.

3.3.2 PAIN-ONSET AND EXPERIENCE

A distinct time of pain-onset could be identified for each participant. For the majority, the onset of their pain was sudden and precipitated by an obvious injury. Others reported a gradual or intermittent onset with increasing pain-intensity, where pain was precipitated by an illness or disorder, or in some cases it had no known or obvious cause. The participants with a gradual pain-onset were typically more likely to have delayed longer in seeking treatment than those with a sudden-onset. Delaying treatment-seeking may have affected their pain and disability outcome.

The participants characteristically experienced onset of pain during a time of stress and hard work, or particular conflict. Although these situations were common in their lives, the situations were regularly described as more extreme than usual at the time of pain-onset. Situations illustrating this are: *"things weren't happy at home"*, or *"I was very, very busy managing a timber company with a staff of twenty"*. The participants most frequently discussed their pain experience using a language that focussed on the physical aspects of their pain. Very little emotional language was used. Several parameters could be identified from the participants' descriptions of their pain experience. Those not identified as central to the development of chronic pain are not considered further; these are cause, site, diagnosis, and description of pain. No pattern was found in these widely varying parameters that seemed to differentiate different pain experiences.

There was a wide variation in the pain expressed by the participants in this study. Despite this, all participants described their pain as "spreading" over time from the region that was initially painful. For example, one participant said: *"it started off in my hand and then went up the rest of my arm into my shoulders and neck"*. The participants each described several different "types" and locations of pain, and therefore, they had more than one chronic pain difficulty, often arising from different injuries or illnesses. They usually reported their pain as consisting of fluctuations on a base of constant pain.

The participants usually described perceived physiological changes that occurred during and after the onset of pain, as causing their pain. These changes, such as muscle wasting and imbalances, were seen by the participants to contribute to the maintenance and escalation of their pain. Perceived physiological changes to other areas of the body were associated with the pain appearing to "spread", leading to additional painful sites. These included the implicit theories they held about the cause of their pain. For example, one participant stated: *"I got assessed by a physiotherapist ... looking ... for muscle imbalances ... I am not moving that arm ... its opposites so my left hip is getting sore and why my back and neck is getting sore"*.

3.3.3 TREATMENT SEEKING

The typical response to a continuing painful condition was to seek advice and treatment from a health-professional. The time frame in which this treatment was sought depended upon the individual, their perception of their pain, their implicit theories about it, and impeding factors. The delay varied from several hours to days or even months.

Typically, the participants did not actively attempt to reduce their initial pain immediately after its onset. The majority reported simply ignoring the severity of their pain. They expressed clear ideas (implicit theories) about the underlying cause of pain and their reasons for not seeking treatment. For example, many stated that they were just too busy, usually with work, to stop what they were doing to allow the injury to recover or to seek professional treatment. In the words of one participant: *"I had obviously overdone it ... I would get this numbness in my fingers and severe cramp pain and I would have to get up [at night] and shake my hands and rub my hands and rub my arms to try and get the circulation back. I thought it was just the body's reaction to doing too much too soon"*. She then said that she went to the doctor *"about three weeks after, I was being patient, waiting for it to go away"*. Other participants described similar patterns. For example, one stated: *"it was about two weeks before I went to the doctor"*. For some, this delay was for a different reason, such as fear. These participants were using different implicit theories about the cause of their pain, for example, one participant was concerned about arthritis, he said: *"I hadn't gone to the doctor because I just didn't want to know"*. Feedback from significant others also influenced their delay in seeking assistance in so far as some participants described enjoying the positive response that they received from others when they were in pain and had to limit their activities, for example, one participant stated: *"[they] took care of me"*.

A cyclical process exists, involving a feedback loop, where the participants' experiences can be illustrated as moving through the treatment-seeking part of figure 3.3 several times during their initial six months post pain-onset. The outcome of treatment often led to the participant seeking further help. Participants often changed health-professionals when treatment did not produce an immediate improvement. The new health-professional may have been from either a similar or different discipline. For example, one participant reported consulting at least six different physiotherapists within a period of approximately two months. This choice depended on their theories regarding pain in general, their specific pain difficulty, and their reason for not continuing with their previous health-professionals. For example, one typical participant stated: *"I think that they [anti-inflammatories] are bad for your stomach ... my doctor ... tends to just prescribe ... I'm thinking of changing doctors"*. The participants appeared to change health-professionals for one of two clusters of reasons: either they perceived that their pain was not improving, or it was worsening; or secondly, they felt misunderstood, not listened to, or not believed concerning the extent of their pain or other difficulties. Many participants reported health-professionals telling them that their pain was *"in your head"*, that it was *"not real"*, or that they were *"making it up"*.

The act of seeking professional help again returned the participant to the "treatment-seeking" stage of this model. When the participants had revolved through this cycle a number of times, they typically reported having *"lost faith"* in the health-professional system, leading some to *"give up"* on treatment or hoping to ever be free of pain. Because they thought they would never be free of pain, they did not attempt activities they would have considered normal prior to the onset of pain. Some lapsed into a state of doing very little at all. In the extreme, they did not even get out of bed. Others reported that they would get up and just sit in front of the television. In the latter part of this stage some participants did very few activities and rarely left their homes. Generally, during this phase they did not do activities that caused them additional pain. "Giving up" was usually a phase that they passed

through, and as their pain continued, they sought additional treatment.

Implicit theories about the causes of pain played a large part in the treatment-seeking response of the participants. The following participant, who didn't go to the doctor for three to four weeks, despite debilitating pain, illustrates this. She perceived that pain was only caused by accidents and she did not classify the cause of her pain as an accident. She said: "*[I was] thinking oh well surely this will go away as I hadn't had an accident as such*".

Many of the participants described additional complicating or impeding factors. For some, this was described as a misdiagnosis, with the resulting lack of appropriate treatment. For example, one participant stated: "*it was badly displaced, and [soon after the injury] Grandma's dog leaped in and he jumped on me and pushed my elbow and reduced the displacement they [the doctors at the hospital] were very surprised that I had so much soft tissue damage and there was so little, um displacement and [therefore initially treated it as less severe than it was]*".

3.3.4 TREATMENT ADHERENCE

The participants all reported difficulty adhering to their prescribed treatment. At best, they only adhered partially to their treatments. Treatment adherence varied markedly between participants and for the same participant over time. There were many reasons for this variation. These are discussed below, first as a concept then with examples.

The participants' cognitive, emotional, and behavioural responses to treatment were usually negative. The participants reported feeling frustrated with the type and process of treatment and its outcome. As a consequence, they did not follow instructions for the prescribed treatment, be it medication, exercise, or rest. Reasons cited for not adhering to treatment included: not understanding what they were required to do; that it did not fit with their lifestyle, personal goals or implicit theories, particularly the belief that health-professionals had different ideas of the cause and therefore the treatment for their pain than the participants did; or that they did not accept the type of treatment in general, particularly medication.

A major concern was the participants' inability to communicate effectively with health-professionals. The participants were unable to openly discuss their thoughts about various treatment options and the problem of side-effects with their health-professional. This was especially important given that many of the participants held strong opinions and personal theories about which type of treatment would best suit their type of pain. There was often a mismatch between their expectations and behaviour and those they reported their health-professionals held. This was especially evident when they reported how health-professionals viewed their treatment, in addition to the thoughts they reported having after they had seen the health-professional. Attitudes to medication provide a prime example of a mismatch between a health-professionals' and participants' expectations. One participant said: "*my doctor is really strange, he tends to just prescribe, he is not all that keen on physio*" when the participant refused to take medication. Participants also reported doing too much activity too soon, describing themselves as re-aggravating the initial damage, and producing further damage. A typical example was expressed by one participant, they said: "*I wanted to play in a violin recital ... I built up with*

physio and practiced ... tried to build up my playing strength, and although I played successfully in the concert, it was with a great deal of pain and as a result my shoulders worsened and once again it meant that I was doing too many things too soon". Usually the participants attempted to return to their usual activities as soon as they commenced treatment or a slight improvement was obtained. This was typically despite health-professional instructions against this. This tended to be a stage that the participants passed through.

The implicit theories and beliefs held by the participants affected their attitudes to treatment and to the role of health-professionals. This, in turn, affected treatment adherence. The participants appeared to lack knowledge of causes for, and treatments of acute pain, judged from their behaviour. This may have been related to their implicit theories about the causes of pain, or the fact that they did not want disruption to their lifestyle. For example, some participants frequently continued applying physical stress to the injured area, as if it was strong and uninjured. A common belief was that health-professionals should be able to cure pain without any effort or change in lifestyle on the part of the participant. A further example of such implicit theories is that many participants perceived medication to be an inappropriate treatment; therefore they did not take medication. As a result of their beliefs about the cause of their pain and its treatment, the participants often did not seek treatment, or did not comply with the type of treatment prescribed.

In the early stages of their acute pain, the participants appeared very patient as they waited for their pain to dissipate. As their pain progressed they became impulsive and impatient when the pain did not immediately vanish. For example, one participant stated: *"what I didn't realise was that the damage was there and it wasn't going to go away"*. The same participant reported that after surgery she immediately returned to her normal busy and active lifestyle; she said: *"not realising, well I guess that, I realised it was uncomfortable, but I thought that it was just natural weakness after the operation"*. Participants reported doing too much too soon. This was usually work, sport, or exercise related. Some examples included: *"I sort of couldn't afford a lot of time off work so I probably bugged a lot of it up myself by going to work too quick"* and *"I guess training [cycling] again fatigued it, and running"*. The following participant reported driving a campervan on a long holiday trip immediately after having had surgery to correct a wrist problem; she said: *"I got a form of inflammation in my wrists, so instead of being able to be repaired with rest and gentle exercise, I was giving them a dose of 'what for!' far too early. And they got swollen ..."*.

For some participants there were additional complicating or impeding factors, such as financial difficulties that prevented an appointment with a specialist, allergies to medication, or large distances to treatment services. A typical example was when one participant stated: *"a very long drive, all the way to [place] from [place], it took five hours"*. This reduced their likelihood of a successful outcome to their acute pain.

3.3.5 TREATMENT OUTCOME

Treatment in the acute stage of pain produced a variety of outcomes and efficacy. Usually the outcome was at best mixed; occasionally it was reported to not help at all. In the worst cases, the participants

reported a negative outcome, with treatment aimed to relieve the pain actually aggravating it. For example, one typical participant stated: *“the physio didn’t help, it made it a lot worse, it really did”*. Usually in the early stages of acute pain some types of treatment resulted in a mild to moderate decrease in pain-intensity. This improvement was incomplete and the short-term response reported was not sustained over time. Treatment can and does reduce pain. However, due to the selection criteria for this study, that the participant must have current chronic pain, there was, at best, only a modest reduction in pain-intensity or disability, which did not completely relieve the pain. For example, a participant discussing physiotherapy said: *“it improved it to a point, say within a couple or three weeks ... it was a lot better than it was, but still sore”*. In many cases treatment was described as causing additional pain, disability, and physiological damage. This was in addition to it being ineffective. Additional complications were especially common with invasive treatment such as surgery. These also occurred with physiotherapy, and medication, such as narcotic analgesics and anti-inflammatories, causing addiction and gastrointestinal problems respectively.

All the participants’ implicit theories changed as a consequence of their experience with pain. For example, as time passed, the participants’ implicit theories and attention to their symptoms changed as their vigilance towards painful stimuli increased. Attention to the pain or any symptom increased the likelihood of the participant noticing any slight symptom and interpreting it as the continuation of their pain. For example, a young man with chronic pain in his left knee said: *“when I’m training I could get a sharp pain in my right leg and just dismiss it as something that is happening down there, but when it is my left leg, ’cos there has been something that has happened there ...”*.

3.3.5.1 Cycle of Treatment

Despite the extensive treatment some participants received, they frequently expressed frustration with their treatment. In particular they were frustrated that their treatment did not immediately resolve their pain. This led to them consulting with another health-professional, and also led to non-adherence with the original prescribed treatment. This cycle repeated itself, further exacerbating the participants’ frustration with the health system. Within the first six-months of their pain, the participants often cycled through this feedback loop of the three treatment phases illustrated in figure 3.3 many times.

3.3.5.2 Successful Pain Resolution

A criterion for participating in this study was that each participant currently suffered from chronic pain. As such, each participant passed through the acute pain phase without resolving their pain. This is not to say that all those who develop acute pain will develop chronic pain. Many people experience a successful resolution to their pain and do not suffer from long-term pain or disability. Thus, the possibility of successful pain resolution exists during the acute pain stage. This may occur post pain-onset and before seeking treatment, and result in the participant experiencing no ongoing pain. A second possibility exists: that of successful treatment leading to successful remission of pain and therefore the person experiencing no residual or ongoing pain. However, because of the selection criteria of this study, every participant developed chronic pain and did not fall into either of these two

possible categories.

3.3.6 CHRONIC PAIN

As the participants passed through this section of the model they developed chronic pain. As defined above, for the purposes of this study, if pain continued six months after the initial start of acute pain, the pain was considered to be chronic. This was not an obvious transition for the participants, there being no dramatic changes in thoughts or behaviours as a result of reaching six-months post-pain-onset. This section leads directly to the pain and disability maintenance factors and management of chronic pain and disability, which are discussed in sections 3.4 and 3.5

3.3.7 DISABILITY

Along with the subjective experience of continuing pain, the participants also experienced functional disability associated with their ongoing pain. This ranged from no disability, typically with low subjective pain-intensity, to significant disability, which was often associated with depression, lack of functioning and maladaptive implicit theories about pain, in addition to high subjective pain experience.

3.3.8 IMPLICIT THEORIES

Implicit theories are the participant's cognitive products, processes and schemas about their pain. Illustrations of implicit theories include the belief that pain is "*normal*". The participants initially rejected the seriousness of their pain and physiological damage. The participants' beliefs involved strong attitudes to illness and injury. They had a clear understanding of what they thought constituted an illness or injury. How the participants thought about their pain, and the causes of their pain, played a large part in their response to it. Implicit theories influence, and are influenced by, many of the factors in the model and may help or hinder the participants with respect to their developing chronic pain. Therefore, implicit theories are discussed here and, where necessary, have been discussed throughout the rest of the acute pain section of this model. The participants' background / vulnerability factors, including their previous and current experiences with pain, influence these theories. Implicit theories are modified by experience and therefore they are likely to change over the period of pain. There is a constant two-way interaction between implicit theories and all aspects of the participants' treatment. The influence of background / vulnerability factors on implicit theories may be related to the participant's own physical experience with pain, or they may be associated with the participant's understanding of the pain experience of others.

3.3.9 IMPEDING FACTORS

Impeding factors are factors external to the participant, or factors that they perceived to be out of their control, which impeded their progress toward pain resolution. To the participant the perception of uncontrollability, rather than the reality of uncontrollability, was critical. If the participants perceived these factors to be uncontrollable, then they did not attempt to control them, even if in reality they may

have been able to. Impeding factors were typically related to “unsuccessful” treatment and resolution of pain for the participants, hence the label “impeding factors”.

There were many impeding factors to the successful resolution of the participants’ pain problems during the acute pain stage. These factors varied in form for each participant and over time for individual participants. They typically appeared to function as a barrier to successful outcomes. Impeding factors were present for some, if not all, of the first six months post pain-onset for each participant. For some, these factors were present immediately post-injury. An example of this is distance to medical help preventing immediate medical attention. Or alternatively, age was a factor that prevented treatment as, for example, when the participant was too young and still growing and therefore could not undergo surgery. Background / vulnerability factors interacted with impeding factors to a significant degree. Together they were associated with the participants not receiving what they considered adequate and effective treatment. This, of course, was independent of the reality of any treatment benefit that might have been seen by health-professionals to exist.

3.3.10 PATHWAYS THROUGH THE ACUTE PAIN SECTION

As a result of the continua related to the many factors in this model, there are a large number of pathways a person could take through figure 3.3. These pathways are particularly important as they determine the outcome of the acute pain phase. Three contrasting scenarios involving three possible pathways will be described here. One leads through the right-hand side of the continua, another through the left-hand side, and the third through the middle. The continua for each construct can be mixed and matched to create a multitude of different paths. In addition, the same person may take different paths at different stages in their acute pain phase, due to the feedback loop. The hypothetical people below are not gender specific.

A pathway through the left-hand side of the continua of this model would begin with the hypothetical person having a low level of unhelpful background / vulnerability factors prior to pain-onset. Pain-onset is likely to be sudden with an acute injury of obvious cause. The person would immediately seek treatment and be able to negotiate a treatment plan with the health-professional that fitted with his implicit theories. Thus, treatment-adherence would be high. Because of this, and his positive treatment outcome, he would be unlikely to seek further treatment. There would be a low number and impact of impeding factors, and these would have very little, if any, influence on his pain management. Treatment outcome would be positive, leading to no pain or a low level of pain with very little disability. The pain or disability would depend mainly on physiological factors.

The second pathway is through the middle of the model. Such a hypothetical person would have a medium level of unhelpful background / vulnerability factors with a moderate number, and impact, of impeding factors. Her pain-onset may not have been entirely obvious and she may not have identified the cause or have immediately identified that she had an injury or illness. Her treatment seeking would be delayed, but by a matter of days or weeks rather than months. There would be only moderate negotiation of the treatment process. Her implicit theories would be somewhat different from those of her health-professionals, leading to partial treatment-adherence. As a result, treatment outcome

would be mixed. Therefore, she would be likely to seek further treatment, repeating this cycle. This hypothetical pathway would lead to residual pain and some level of disability.

A hypothetical person taking the right hand side of the various continua throughout this model would have a high level of unhelpful background / vulnerability factors. This increases the likelihood she would develop chronic pain. She would have a high level of impeding factors, which, in turn, would be partially related to her high level of background / vulnerability factors. The background / vulnerability factors may have a causal relationship with the impeding factors. Her implicit theories would be inconsistent with those of the health-professionals she consulted. Her beliefs would not match those she perceived her health-professionals as having. Her pain-onset would have been gradual with no known precipitant. She would delay seeking treatment, perhaps to a stage where she did not seek treatment within the first six months of her pain-onset. If she did seek treatment, she would not adhere to the health-professional's suggestions, probably because the suggestions did not fit with her own theories of her pain and its treatment. She would be unable to resolve this with her health-professional due to communication difficulties. She would seek further treatment from a different health-professional, from a similar or different discipline, depending on her implicit theories. Adherence to this treatment would also be low. This cycle might repeat many times within and beyond the acute pain stage. Her treatment outcome would be negative and would involve a high level of pain and disability. Her pain would continue past six-months post pain-onset and therefore she would develop chronic pain, and have a high level of disability.

3.3.11 SUMMARY OF THE ACUTE PAIN RESULTS SECTION

The acute pain section models factors in the first six-months from the onset of pain through to the development of chronic pain. It follows from the background / vulnerability section. Pain present after six-months is defined in this study as chronic, hence this section leads on to the chronic pain and disability management and maintenance sections. The background / vulnerability factors influence the whole of this section as they influence the participants' beliefs and behaviours with respect to their acute pain and its management. Treatment is sought after onset of pain. Treatment seeking is usually delayed. There are varying levels of adherence to this treatment. This leads to treatment outcome, which for all participants in this study was negative. This led the participants back into the "seeking-treatment" part of this model via a feedback loop. Influencing all these factors are impeding factors and implicit theories. Implicit theories are also involved in the feedback loop. As a result, when the participants cycle through this feedback part of the model their implicit theories and, therefore, their behaviour, may have different progressions. Therefore the outcomes may be different for different participants, and the same participant at different times.

3.4 PAIN AND DISABILITY MAINTENANCE FACTORS

There are factors that maintain pain and disability for an individual. These effect the pain experience and the management strategies chosen, and as such, they effect both the acute and chronic pain phases. An overview of this can be seen in figure 3.1. As is shown in this figure, pain maintenance

factors exist in parallel with the acute pain, and chronic pain and disability management sections. This section provides a direct link with the background / vulnerability factors, and is an extension of these constructs. The pain and disability maintenance factors are conceptually very similar to the background / vulnerability factors. The differences are mainly of a developmental nature, and the fact that the sections exist on a different time frame. Many of the constructs identified as contributing to the vulnerability to chronic pain are developmentally still present as stable long-term factors. These factors serve to maintain chronic pain and disability. Pain and disability maintenance factors address the participants' lives post-onset of pain, including how their personal and interactional styles contribute to the development, maintenance, and progression of chronic pain and disability. Each of these factors is modelled as existing along a continuum. Where a participant lies on each continuum changes over time for each participant and between participants.

The model for the pain and disability maintenance factors is shown in figure 3.4. The background / vulnerability factors influence all of it as the concepts discussed in this section are developmentally linked to the background / vulnerability section. These form the basis for this section and can be seen in the shaded section of figure 3.4. In this model, how the participants viewed others and the world, combined with how they viewed themselves and these contributed to a range of other factors. These views can be applied to the construct of attachment, as is shown by the grid on the left-hand side of this figure. These other factors include level of isolation, personal and interpersonal skills and social competence, communication, conflict resolution, and affect regulation. These all influence illnesses and injuries, including pain, and the participants' reactions to these. The participants are generally placed on these continua at one end, so although these continua extend across the full spectrum, most examples are at the right-hand side of these continua, because all participants developed and maintained chronic pain and some level of disability.

3.4.1 VIEW OF OTHERS AND THE WORLD

The participants' view of others and the world represented how they saw and evaluated other people and their lives in general. This view was generally negative, and was derived from the participants' view of others and the world described in the background / vulnerability factors in section 3.2. As such, this construct is directly influenced by the corresponding construct in background / vulnerability factors section.

The participants typically held high expectations of others. These expectations were often not met, causing disappointment. One young participant said: *"none of my friends even knew [of sister's suicide], none of them checked the deaths ... my closest friend ... she's never really asked much about it"*. The participants appeared to expect others to have values and ideas very similar to their own. They were critical of others when they felt that others were not meeting these expectations and they often sought external approval for their actions. A participant reported an incident concerning her future marriage, she said: *"I thought it [engagement] would be really happy and really exciting, but when we told them [parents] their response was ... 'you really do choose the most awkward times don't you' ... my whole world just kind of fell down around me in that this whole dream was shattered"*.

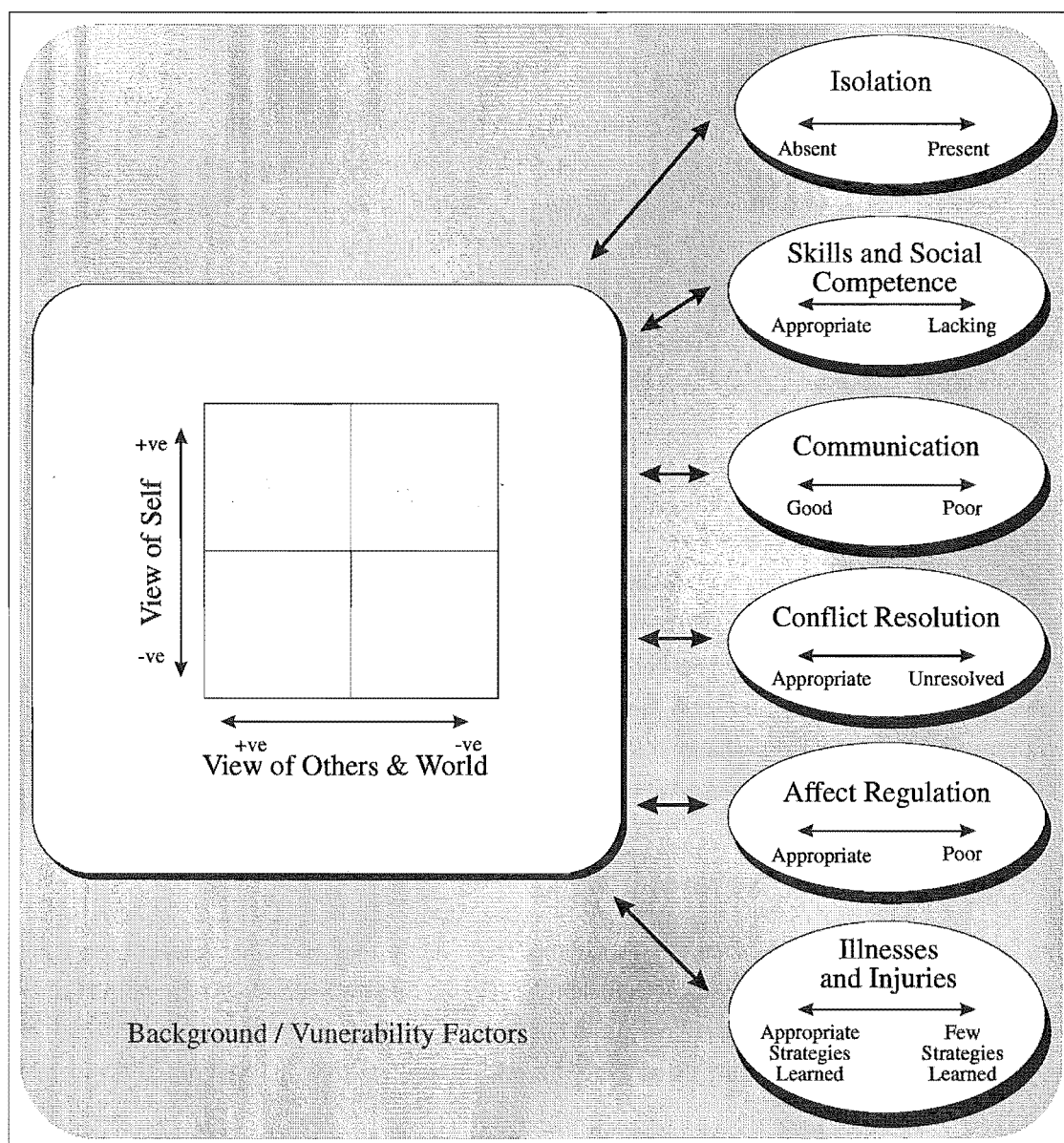


Figure 3.4: Pain and Disability Maintenance Factors.

The factors involved in maintaining pain after the participants developed pain. These are not directly pain-related but still serve to increase the likelihood of their pain continuing.

The perfectionistic standards held by the participants exacerbated their intolerance and criticism of others. Examples reported by the participants included: *"most of the nurses that I was working with were there to get the pay cheque ... I came in for flack because I made them feel bad ... they resented me because I was younger and ... motivated, I was caring, compassionate"* and *"I had 15 years of preschoolers so when I hear people moaning about that [preschoolers]... it is not that long"*.

Many participants felt that their siblings received, and had more, physical resources and non-tangible processes such as support and attention than they did. Typically, this feeling began in childhood and extended into adulthood. One participant illustrated this by saying: *"my mother was about to make a trip to Japan with my sister, to meet all her Japanese contacts ... I had never been overseas"*. This jealousy caused difficulties with family relationships well into adulthood. One participant stated: *"I felt for a very long time a real resentment toward my mother"*. This often led the participants to be very critical of the characteristics and values held by their families and friends. An illustration of this was: *"I know him [father] and I don't like what I know, he is quite a selfish person and he is also kind of anti-feminist, he is a bit closed minded"*.

The participants were very critical of their parents not paying enough attention to them. They felt that their parents did not know what was happening in their lives. This extended to situations they had not told their parents about. One participant spoke of her mother's new job negatively because of her mother's lack of attention, she said: *"this was a new area for her and she was interested in it so she was throwing her self into her work a lot more, this wasn't just a job this was a career now, so that was different"*. Another participant claimed that her parents did not understand her depression, even though she had not told them of her feelings. Moreover, she thought that her parents should have understood it and done something to solve the problem, she said: *"she had no idea ... my mother was working in the mental health area and it was like cobblers children don't get shoes kind of thing, she just couldn't see it"*.

A common theme expressed by the participants was of significant unresolved conflict. This primarily involved their family, but it also extended to non-family members. The conflict usually related to their pain. For example, one participant was critical of her mother being inattentive to her pain, she said: *"she could sometimes, when she could step out of the situation long enough, she could see when I was in pain"*. There were also times when the conflict was unrelated to their pain. For example, participants stated: *"things weren't happy at home simply because my younger brother was a real problem"* and *"I had a whole list of reasons why the world was awful and why things were bad"*. The conflict was exacerbated as the participants often lacked the skills to manage it. For example, a typical participant stated: *"that is where we fell out. I have hardly spoken to [person] since that happened ... I just can't look [person] in the face"*. Conflict resolution is discussed in more detail in section 3.4.6.

Many of the participants held a dichotomous view of the world, which they divided into "good" and "bad". They identified with "good" people and vigorously rejected the attributes of "bad" people, and the "bad" people themselves. They compared themselves, and judged their self-worth, against their families, even in the case of those who had left their family of origin many years previously. They

dramatically changed their behaviour, so as to be similar or dissimilar to these significant people. One participant, who described her father as a “*workaholic*”, said she was happy to be unemployed because this was different from her father. She classified her father as being “*bad*”, and stated she did not want to be like her father and work too hard. Another participant, who wanted to be dissimilar from his family said: “*I planned to succeed in whatever I did because no one in the family had*”. The participants tended to over-identify with individual people, such as their mothers, rather than general characteristics, such as hard working, which their mothers may have portrayed. They strove to be exactly like a particular person. This was particularly evident with reactions to pain, either striving to be very like or very different from their parents. The participants also characterised people based on their reaction to pain. This division was regularly based on communication about pain. One participant described her mother as follows: “*my mother is the complete opposite [from the participant’s father, whose reaction to pain he approved of], she is a really kind of stoic, you know, ‘nothing effects me and there is no such thing as pain and you just have to get on with your life’*”, she then added sadly, “*I don’t tend to talk about it [pain] very much*”.

The participants also regularly compared themselves, and their families, with others. One participant discussed how good and interesting her children were, she said: “*they are all the most interesting young people. All of them. My youngest daughter she worked in [country] in the middle of the war ... [another daughter] was a community worker, she worked with Maori and Polynesian [street] kids*”.

Although the participants described many difficulties with their interpersonal relationships, most described one close relationship, usually with a partner. They often described this relationship as loving and supportive. The partner was typically described as supporting them, or doing many tasks for them, that were not reciprocated. Some described their partners as doing work around the home that they could not do, for example, “*he would get the meal, or ... do the parts of it that I couldn’t do*”. Described support usually related to pain or behaviours associated with pain. For example, one participant reported: “*[partner] drew up a monthly exercise program, and he said, now just write down every bit you do ... I found that very encouraging*”. Regularly, the partner performed activities or provided support for the participant in response to pain-behaviours. For example, one participant stated: “*[partner] is really good ... he kind of comes along and makes me take breaks ... he massages me after work ... he will say ‘stop what you are doing and have a break for a while, lie down’*”. Some of the participants acknowledged the massive change that partners had to make in their own lives to accommodate them, their pain and their disability, and how well their partners managed this. One participant said: “*I am quite impressed by how well he coped*”. Whilst most had broken up with their long-term partners, some still described their partners in very positive terms, as if they were still their partner. Typical examples included: “*my wife was always my best friend*” and “*we are in fact now better friends than we have ever been*”. This support from significant-others, contingent on pain-behaviours, appeared to increase their pain-behaviours which were socially reinforced.

Many participants viewed marriage as an ideal, as having a greater significance than merely an expression of commitment or religious meaning. It appeared to provide a means of evaluating their

self-worth. Not being married was associated with a sense of failure and embarrassment. For example, participants stated: *"I had me old foundations kicked out from under me ... I'm on my own [breakdown of marriage] ... that is almost exactly opposite to what I was planning to be"*, and *"I used to use my life to help to show other people ... what they should be doing. I used to help a lot of people out with marriage problems and use my marriage as a guide"*.

The participants described ambivalent feelings towards others. They regularly expressed both very negative and very positive attitudes towards others. This fits closely with their dichotomous use of the criteria "good" and "bad", and also with the difficulty they had in trusting others. One participant strongly reported not wanting to work to avoid identification with her family working too hard, yet also expressed bitterness towards others who had jobs. Participants described great difficulty receiving assistance from others and being fiercely independent. One participant described difficulty in *"learning to ask for help and not trying to do it all on my own"*. Many participants described feeling very rejected by a number of people over a large portion of their lives. For example, one participant stated: *"I felt, that ... my sister's life was a lot more important ... I did feel quite rejected"*. As well as feeling rejected, most participants reported feeling very isolated. They often laid the responsibility for this with other people. For example, one illustration included: *"my mother finds it difficult to relate to me because she is not stoical like that, she sees me being stoical and doesn't know how to get through, um, she just doesn't know how to relate or what to do with me or how to help"*.

Post-injury, negative life-events continued to play a significant role in the lives of the participants. The effect of such events was compounded by the participants' inability to deal effectively with the situations. This served to further decrease their confidence and self-esteem. Additionally, they often relied on maladaptive behaviour modelled and copied from their immediate family. Reinforcement, by others, of their unhelpful behaviour, only served to complicate the situation. Negative life-events had a compounding effect on the participants' lives. If they failed to adequately manage these events their negative track became more extreme and they were less able to manage it, creating a cycle. Death of significant others, and its effect on the participants, was a significant event that affected a number of participants. Examples provided by the participants included: *"my sister died last year"*, *"I've read that suicide is the hardest"*, *"lots of things were going on [name] was dying, my sister's husband was dying of leukemia and so on."*, *"she [daughter] was engaged to a English man who died tragically just weeks before their wedding"* and *"I've had a couple of things, a good friend of the family's and my daughter's very good friend shot himself, that sent me to ribbons"*. Unemployment was common amongst those included in this study. This had a negative impact on their lives, particularly on their self-worth. Illustrations the participants used included: *"I am unemployed"*, *"being unemployed doesn't help, that's just extra [stress]"* and *"now I fall into the trap of not being able to work at the moment. And I find that very embarrassing"*. For most, their employment status appeared directly related to their chronic pain.

In summary, the participants' evaluations of others were usually negative and critical. As a result, they expressed difficulty interacting positively with others. Typically this occurred because they had significant unresolved conflict in their relationships and held high expectations of others, which those

others often failed to meet. The participants held dichotomous views of others and the world, often judging themselves against others, particularly their families. They relied on constructs external to themselves in order to judge others and formulate their self-concepts. For example, marriage appeared to be a very important concept and was central to their desire to report a successful relationship. Mixed feelings were described towards others, particularly their family members, and often led to the participants reporting feeling rejected, despite the extreme importance of being accepted. In addition, they experienced many negative life-events, which they did not manage effectively. This placed them on a negative track, which increased and maintained their chronic pain and disability.

3.4.2 VIEW OF SELF

The participants' views of themselves, described in this section, evolved directly from their views of themselves described in the background / vulnerability section. These views exhibit considerable continuity over time. The main differences were of a developmental nature and a different time frame. The view of self in this section also interacts with their current pain and disability. The views of themselves relate to how they saw themselves in relation to their ideals, others, and the world.

The overwhelming impression from the data in this study was that the participants held very negative views about themselves. These negative views related to activities they could no longer perform given their pain and the associated disability. The greater the disability, the more extreme the views. For example, two participants stated: *"I had virtually become what I would term an invalid"* and *"I started to class myself as a no-hoper and one of these people that don't really want to work ... I'm as useless as you know what"*. Their negative attitudes also related to what they had lost. Examples of losses included: *"I don't have my business anymore, I've lost that already"* and *"I get a bit pigheaded, when I can't do things I get very annoyed with myself. Saying that 'I used to be able to do it so I should be able to'"*. Some negative comments were global and not specific to their chronic pain. Examples of these global statements included: *"God I hate my self"* and *"I thought I was really hard done by ... I thought that I was pretty hard done by, but that is how life is"*.

The participants appeared to view themselves simplistically, unidimensionally and dichotomously. As discussed in section 3.2.2, they saw themselves as being either "good" or "bad". They did not see themselves as having some traits and behaviours that were helpful and some that were not, or that these traits or behaviours might be helpful in some situations but not in others. They often focused on only one area of their life. If that was going well, they considered themselves a worthwhile person, but if not, then they were not worthwhile. This was often related to the areas of work or sport. So, while their views of themselves tended to be global, the origins were domain-specific and dichotomous.

Not surprisingly, the participants typically reported very low self-esteem. This was partially maintained by what appeared to be ineffective self-esteem management. The participants struggled to believe positive information about themselves. An illustration of this was: *"when I got my [very positive university] results I couldn't believe it, I just couldn't believe it, in fact I rang up to check that they hadn't made a mistake"*. As a result of negative expectations, the participants sometimes engaged in activities or developed beliefs that maintained or even escalated their low self-esteem and negative at-

titude towards themselves. For example, one participant stated: *"I developed a[n]... attitude by then that I was not a make up wearing girl and ... I was a bit kind of plain, a bit country-bumpkinish, I was never going to be a city model, so I didn't care what I looked like and I didn't care what other people thought, I think in fact I did but that was my kind of reaction ... so when I was asked when I had the surgery whether the scars would bother me, I said no, no of course not, I don't care"*. Additionally, some participants engaged in what appeared to be self-handicapping to ensure that their self-esteem was not further injured. For example, by not trying at study, sport or work, they had a valid reason (lack of effort) if they failed, rather than attributing it to a stable internal reason. However, this lack of success, in turn, appeared to further reduce self-esteem, creating a vicious cycle. Some participants used their pain or associated disability as a means of coping, interacting socially, and problem solving. These processes were not effective in building self-esteem in the long-term. The participants' lives were often dominated by one activity, such as work or sport. This led to difficulties when they were prevented from engaging in this activity, as they had nothing else to replace it with to maintain their self-esteem.

Most of the participants expressed a strong fear of rejection by others and a desire to be socially accepted. Examples reported by participants included: *"I was very insecure"* and *"I felt really rejected by my sister-in-law and my brother and by [partner] and it just was awful"*. Because of this fear of rejection some participants had never performed activities that are common in the general population. For example, asking for help was particularly difficult and one participant stated: *"learning to ask for help and not trying to do it all on my own, it is a case of learning"*.

Much of the participants' behaviour was based on what they perceived were social expectations. They relied on external cues and acceptance for maintaining their self-worth. They constantly reported fearing rejection. Consequently, they often reported feeling very embarrassed because they were in pain. One participant described the reactions of others to his pain and said: *"it's a big problem ... I get embarrassed about it ... I get embarrassed about having to explain everything"*, another said: *"it is how you get up and how embarrassed you feel when you have got friends around and you are sitting and you get up and you look like a ninety year old when you walk away, before everything starts to function again, I suppose that is stress in itself ... sometimes you sit there and your bladder feels like it is going to explode and you hope that they are going to go home before you have to get up and go to the toilet"*. Not only were the participants embarrassed about being in pain, they also reported being embarrassed about many of the secondary problems associated with chronic pain, such as depression. An example of a secondary problem included: *"I had a mental breakdown, well when I had to go to [psychiatric hospital], they dragged me into the car to take me ... it was an enormous feeling of embarrassment having to be there ... it wasn't exactly something that I talked about. I know it should be OK, but it just doesn't feel like that"*. Some of the participants spent a lot of time and energy trying to act in a way that they thought others expected them to act. One participant talked about behaving to please others continuously and said: *"it is so habitual I can't turn it off"*. Those participants who had separated from their partners (this included most of the participants), were often very sensitive about not being married or in a long-term relationship. One said: *"this word 'spouse' seems to come up a fair bit"*, as he did not want to answer questions about a "spouse", "significant

other", or "partner". Many of the participants reported concern about the opinions of others. They often felt the need to protect themselves in advance from possible criticism. They often achieved this by avoiding situations or topics. Participants in illustrating self-protection stated: *"I feel at the end of it [the interviews for a pain management programme] they thought that I was a bit of a head case"* and *"I find saying no quite hard but I have found this year, that saying no that I have had to learn to say no more often to protect myself"*. The participants' pain and the associated consequences had a large impact on how they thought others perceived them, and therefore how they judged their own self-worth. This judgement was usually negative.

Many of the participants reported that they were a "good person". However, they usually related this to uncontrollable factors that they perceived were not related to effort. An illustration of this included: *"I still have an exceptional memory, photographic sort of memory"*. Other participants reported a *"very high IQ"* or stated that they performed very well at school or university. Again, they did not relate this to an internal factor such as effort. The participants were very careful to distinguish themselves from other people whose traits they classified as being "bad". In some situations, being "good" appeared to be related to effort, however it was not perceived in that manner. For most participants it was very important that they worked hard. Examples the participants provided included: *"it was amazing really that I didn't take any time off work, but that reflects the type of person that I am, like taking time off, I would rather do the jobs with the difficulty rather than staying home and resting"* and *"someone gave me an article the other day and I am the typical type, overworked, over-everything"*. Often being "good" was sometimes related to continuing on and not acknowledging pain. For example, one participant stated: *"I don't let it stop me from doing things"*. These beliefs directly affected their pain management. This is an example of an implicit theory. Implicit theories are discussed in sections 3.3.8 and 3.5.3.

The participants appeared keen to manage the interviewer's perception of what they were saying in order to present well. An example provided by a participant included *"there was no money, it is not like we wanted to rush in and get money out of it, it's sentimental value"* when discussing efforts made to obtain property after a death of a relative. The participants would often list things that they were good at. They showed a strong desire to excel, both for themselves and to affect how others, including the interviewer, saw them. Particular situations that the participants highlighted included education, an example being: *"I ended up getting an A"*, or work, examples provided by the participants included: *"I've always worked for money"* and *"I run the household you know"*.

The participants expressed high moral standards. Participants said: *"I don't smoke and I don't drink, if I have a little bit of wine I definitely don't drive"*, and *"because of my high standards I have always placed on my self, if I am going to do something I am going to do it 100%"*. Another trait that was identified positively was personality. An example of this included: *"[I] am a high energy person"* and *"I am sort of a very up, up front, extrovert, bright person"*. The ability to function despite pain was seen as a desirable trait. Examples included: *"I am not one of these people that say, oooh it hurt I had better stop. I am not afraid of hurting my self"*, *"this is the way I work, the more it hurts the more I go"* and *"I'm not a wimp, believe me"*. In addition to personality traits, many participants viewed

their previous physical ability as being very important to them. One participant stated: *"I was thin and I was lean and I was the strongest man in the crew. It was my business and I was the strongest one there. People lifting a cabinet with four of them, I could do it with myself, and walk past them, I'd beat them [implying that he could not do this now]"*.

This construct of "goodness" appears to be a paradox when related to the participants' low self-esteem. "Goodness" appeared to be a process they used to manage the social situation of the interview, and other social situations, and to avoid perceived rejection. This may have been because they were externally focussed and had discussed many negative aspects of themselves. The majority of the participants held a dichotomous sense of themselves, others and ideas. They struggled to see continua applying to their lives. Instead, they saw things in either black or white and varied their behaviour around these beliefs. Pain, perceived or actual, was also generally thought to be "bad", whereas being "stoical" and continuing-on regardless was considered to be "good".

Another theme with which the participants identified was being annoyed with themselves. This was often a result of their reaction to pain. Examples of this annoyance included: *"I have restricted my normal reactions and my normal feelings about things, and expressions of things because I have squashed them all because so many of those reactions as a kid have been to pain"* and *"I'm not a wimp, but I feel like one now, I do I feel totally wimped out by it"*. This annoyance can be linked to their primarily negative beliefs about themselves, in particular that they felt unworthy and undeserving. One participant described being annoyed for feeling like a failure and giving up, he stated: *"it gets a bit frustrating and I've learnt to give up"*. Others were frustrated that they could not be as active as they would have liked. Examples illustrating this included: *"I used to be 12 stone and I'm like 18.5 stone now"* and *"it is ludicrous doing training and suffering in the rest of life sort of thing. It is bloody mindedness to keep getting beaten up"*. The participants expressed many reasons why they preferred to be active, including sport and health. Their frustration and irritation is likely to have been related to other negative affective states such as depression, loss and grief, which were common in the chronic pain participants in this study.

In summary, the participants generally saw themselves negatively and discussed this in terms of their pain. Typically, their view of themselves was simplistic, involving only one or two concepts. This made it difficult for them to manage their self-esteem. They were concerned about their interpersonal difficulties and feared rejection. Often they reported that they were a good person or gave evidence of this, perhaps in an effort to be seen in a positive light and therefore avoid rejection. They appeared to have a dichotomous sense of themselves similar to that which they saw in others. This related particularly to the concepts of "good" and "bad". They reported being annoyed and frustrated with themselves. This was related primarily to their difficulties with their pain and its consequences and is likely to be related to constructs of loss and depression, primarily as a result of their chronic pain.

3.4.3 ISOLATION

The participants tended to isolate themselves from other people. They did not interact with many others, nor did they become involved in many activities. Frequently, the participants had ceased

working because of their pain and its consequences. This increased their isolation as they lacked the social contact that is commonly a part of the working environment.

The participants regularly spoke about their pain isolating them from people, or about isolating themselves because of their pain or its consequences. An illustration of pain related isolation included: *"I won't talk about my pain and I won't share it, I cut my self off"*. The participants discussed moving in different directions from their friends, and no longer sharing common activities. In part, this may have been due to them focussing on their pain while their friends continued their everyday lives. An example provided by a participant included: *"I had changed this much [hands at arms width] and they had changed this much [hands very close]"*. Some felt that because of their pain, and its associated consequences, they would not be able to find new friends. In addition, they would not be able to explain their pain and its effects. One participant in particular said: *"what worries me is what if you actually find someone who wants to go to the movies or something, how do you explain your life?"*. As a result of these concerns, this man did not go out because he did not think that others would understand him or his pain-experience.

Many of these changes in social activities occurred as a result of the break-up of long-term relationships, which regularly occurred after the onset of pain. Further, the participants perceived that they did not have the resources to manage the changes in their lives and to develop new friendships and relationships. This led them to feel very isolated and lonely. An example of this loneliness included: *"I get very lonely now that I have gone from living in a family to living in a town house on my own"*.

Most of the participants acknowledged that they were partly to blame for their isolation and loneliness. An example of this included: *"it is not that I am being rejected and that I am a victim, it is that I am not doing my bit either"*. However, some blamed others. For example, one participant stated: *"she [mother] didn't know how to draw it out of me"*. For many, the only way they knew how to meet people was in a work environment. For example, one participant reported: *"I enjoy more the people side of [work]"*. Some spoke of their attempts to increase their social involvement. Unfortunately, these were usually based on activities that they had participated in prior to the onset of pain and which were no longer practical. This is illustrated by one participant stating: *"I have tried lots and lots of different types of sports and things but ..."*. As a result of their pain and its consequences, their previous ways of engaging in social activity were sometimes no longer possible, or appropriate. Their narrow repertoire of social skills further limited their social interaction. Most of the participants reported that they had also struggled with social interaction before the onset of their pain. An example of this included: *"in many ways, I do my best to change that but ... that is the way it has been"*.

Their isolation was further reinforced by their concerns over meeting people who would accept them together with their pain and disability. This was not helped by the participants' mistrust of others and their lack of belief in themselves. They expected others to treat them in a similar fashion and reject them. Typically, this led to the development of complex strategies to avoid close contact with people in order to avoid being rejected. A typical example included: *"I was so busy I just wouldn't sit down"*. Many of the participants appeared to believe that they could not talk to others about their negative emotions. Or they felt that by talking they were demanding the attention of others. They

appeared confused by what were legitimate interactions. One example included: *"I tried [writing letters home from overseas] but I ran out of happy things to make up and so I stopped"*. In addition to the inherent difficulties of isolation and loneliness, participants found that these social and emotional factors directly affected their pain. An example of this impact included: *"I think actually being lonely adds to your pain-levels, it definitely does. Loneliness is terrible"*.

In summary, the participants were socially isolated. Their pain and its associated symptoms further exacerbated this, as they tended not to go out or interact with people when in pain. Some also experienced mobility and functionality difficulties, which further increased their isolation. In addition, many of the participants suffered from depression and low self-confidence, further reducing their tendency to interact socially. They tended to be very independent, preferring not to engage in adaptive social behaviours or mutual relationships. They needed to adapt and ask for help when in pain, however they often failed to do this, leaving themselves isolated. They lacked effective coping strategies to manage their isolation and its associated affect, and the interpersonal skills to increase their social interaction. They had a strong desire not to impose on others and feared rejection. They wanted others to view them positively. As a result, they were often concerned or embarrassed about their physical, emotional, or social status after the onset of their pain. Many of the participants had a sense of prior strength, but were physically limited because of their pain and its consequences. Consequently they avoided people, because they felt misunderstood and feared rejection. This compounded their existing difficulties of isolation prior to pain-onset as described in the background / vulnerability factors in section 3.2.

3.4.4 SKILLS AND SOCIAL COMPETENCY

The participants generally reported seeing themselves as lacking in interpersonal skills. In addition, the skills they did possess were often unhelpful or maladaptive. Further, they lacked confidence in relating to others. The following quote illustrates this: *"I don't know whether you, I, will ever . . . meet anybody, I doubt it"*.

Most participants reported difficulties interacting socially with others, both at work and leisure. They described a number of reasons for this, including: *"I am seen as an administrative person and . . . not as a social participant"* and *"I found it kind of difficult to fit back in, not that I ever fitted in particularly well to start with"*. Some of the participants provided insight into their difficulties and how they managed to avoid people, or why they found it so difficult to get close to people. An example provided by the participants included: *"I still find it very very challenging talking about it [pain] to anybody"*. Whilst the participants appeared aware of these difficulties, they did not effectively manage or resolve them.

The participants reported having only a very small number of friends. The friendships that they did have, occurred on a superficial level, which some would call acquaintances. Often the participants described their partner as the only person whom they were close to. This further increased difficulties and feelings of isolation, as discussed above in section 3.4.3. This was especially true when their relationships broke down after the onset of pain. They spoke of their mutual friends as being their

partner's friends and therefore siding with their partner upon the break-up of their relationship. This is illustrated by the following excerpt: *"worst of all, my best friends and family were all on my wife's side"*. Many of the participants had tried unsuccessfully to become socially accepted. For example one participant stated: *"I met [partner] and I sort of got involved in the tramping club through him, so yeah, I started to develop some sort of social life ... I took on the role of social organiser ... [but] I wasn't invited to the parties"*.

All but one of the participants, who had been in a long-term relationship pre-pain-onset, experienced a breakdown in their relationship after the onset of chronic pain. Many of the participants associated this with their chronic pain. The following quotes illustrate this: *"my wife walked out due to she just couldn't take any more of my medical business"* and *"my marriage has, I think the modern way of saying it is 'my marriage disillusioned' [they are divorced] and that was caused, I am told, by [her] not being able to cope with me and my health problems"*. The only participant whose long-term relationship did not breakdown endured major difficulties. In her words the pain and disability put *"a big crisis in our marriage"*.

The failure of the participants' close relationships caused them great distress in many different ways. Many found it very lonely, stressful and depressing learning to live by themselves again. Participants said: *"I just hit the wall pretty heavy"* and *"things were falling apart"*. For many, their self-esteem was based primarily on marriage. The marriage break up was usually unexpected. Illustrations of this included: *"that was devastating because I never knew it was happening"* and *"the ex-wife took off, that was like something that I didn't see coming, at all, just got up in the middle of the night one night and just took off"*. When these long-term relationships failed, not only did the participants lose something special but they also had very few other relationships to replace it. This increased their isolation. Some assumed it was the responsibility of others to relate to them and manage their relationships. Illustrations included: *"she just doesn't know how to relate or what to do with me"* and *"my mother finds it difficult to relate to me ... because of that distinct personality difference"*.

The work environment provided a significant, and sometimes the only, source of social interaction. This provided a major drawback when the participants stopped work. This is because they lost their income, sense of self and work, as well as their social circle, all in one setback. In response to being asked if they still kept in contact with people they used to work with one participant said: *"a few, but over the years, it just naturally wears out"*.

The participants lacked the skills to effectively manage difficulties at work. Aversive examples identified by the participants included sexual harassment, poor conditions, and low pay. The participants reported not managing these issues assertively. This usually resulted in the participants staying, but avoiding the issues, or leaving their job. In either case, they did not resolve the issues. (Conflict-resolution is further examined in section 3.4.6). An example of work difficulties described by participants included: *"my boss ... he sexually harassed me at a conference, and I ended up feeling very, very insecure because he just wouldn't keep his hands off me ... it was really awful, so, um, and when things got really bad in the office because he just would not leave me alone ... so I left"* and *"I had a terrible time ... in the end I ran away"*. The participants often expressed very high perfectionistic

standards for their work. Not only were they very critical of themselves, but they were also very critical of the work of others. They expected others to be critical of them. An example provided by one participant was: *"I still figure inside me that this is my job and I get paid to do this and I have got an accountability within me I think ... The job I have got is people orientated it is all the time. You are expected to be on top of things all the time"*.

The participants appeared to have ineffective coping strategies that were particularly focused on the present rather than the future. Related to this were their poor problem-solving skills, which appeared to be short-term based. They described being inflexible in their approach to every day activities and difficulties. They appeared to view their future negatively and unrealistically. Many reported that they were ineffective at coping. Participants said: *"I just fell to pieces and I, I couldn't cope with the pain anymore"* and *"I had quite a large physical and mental breakdown"*. The participants all talked about the difficulties of using interpersonal skills effectively. Sometimes the participants reported not having the required interpersonal skills. One participant said: *"I really do look forward to developing skills"*. They tended to over-react to small problems and have very extreme standards. They described using denial, distancing, ambivalence and emotional alienation. For example, one participant said: *"I won't talk ... I cut myself off"*. The participants did report positive behaviours, such as trying to exercise or play sport, and reported that they could still do some activities. A typical illustration of these activities included: *"I read the paper, I try"*. Many who had been clinically depressed spoke of doing activities when they were not feeling so low. Example of these included: *"doing it at this point when it hasn't got to the point where I can't"*, *"[I] get out of bed in the morning or what ever then that is much better"*, and *"it means that I am much more likely to succeed"*. Depression makes managing both chronic pain and the general activities of life more difficult.

For many of the participants their everyday activities were very rule-driven. They lacked spontaneity. This made them very intolerant of others who did not abide by their unspoken rules. This may have been related to their perfectionism, which will be discussed in section 3.4.7.2. They also seemed unable to manage delayed gratification. For example, they did not act on the fact that while exercise may initially cause them additional pain, it would lead to a longer-term gain. This was not solely related to their pain and pain management. One participant decided not to do a university course for their preferred profession because *"it seemed too much like hard work"*.

Often the future was viewed either very negatively or unrealistically positively. The participants sometimes denied the effects of their pain and disability, the situation they were in, or the impact of that situation. An example included: *"I was trying to convince me"*. They may have inappropriately indicated and believed that everything would work out. Consequently they did not plan for upcoming situations. For example, the following participant reported much difficulty sitting and working at a computer, but she planned to find a job doing just that. When the interviewer questioned this, she said: *"presumably, if I get a desk job I'll have a desk with a chair and hopefully I'll be able to avoid it [pain] enough"*. The participants often had a very unrealistic knowledge of their assets, together with either very positive or very negative expectations for the future. One participant reported a particularly positive view of the future and her upcoming counselling. She thought it was going to

solve her life-long difficulties, she said: “[I’m] looking forward to the future in a positive hopeful sort of light I find that really exciting”. However, the counselling was unlikely to result in such a positive outcome. The opposite of this person is someone with very negative expectations of the future. They could see no positives. One participant illustrated this by saying: “I have no idea, that is one of the worries on my mind is that, well age is creeping up on me and, I have no idea ... what will I do in the future. It really worries me”. Many participants expressed concerns and worries about the future. When asked about the medium-term future, many reported hoping that their pain and disability would get better. However, they had no plans to assist this change now or in the future. A typical example was: “I would like to believe and think that I will regain my flexibility, I am not sure if I will ever regain my full strength in my arms and shoulders, I would like to think I will but I don’t know that, I hope so and I would like to be able to undertake a program of exercise that will ensure that I can. I am just a bit unsure about when or how”.

Stress was a major factor identified by the participants. This was particularly associated with significant interruption to everyday life, including marriages, separations, deaths, including suicides, changing religion, financial and work difficulties, and shifting countries. Participants said: “I have a tendency to stress out heaps”, “there is no reason why I should be so stressed out”, “I think it [being stressed] runs in my family” and “we came back to New Zealand after two years, it was a big change to shift countries”.

In summary, the participants discussed not having skills or confidence in their competency, both personal and interpersonal. Chronic pain caused significant changes to their lives, which they reported having few effective skills to manage. Their environments were disrupted leaving them isolated from any support network they may have had previously, and with few skills and little confidence to develop new social contacts. They typically reported very few friends, with no close friends. They had difficulties trusting others in both social and intimate relationships. Existing intimate relationships often failed after pain-onset. Their relationship difficulties extended to their work environment.

3.4.5 COMMUNICATION

Participants reported difficulty communicating effectively. This difficulty included discussing their pain and its management. Some of the participants reported understanding the principles of communication but not feeling confident to practice them. They reported not feeling willing to communicate and share problems, as they feared rejection. Despite this, while the participants reported wanting increased social interaction and communication, they did not believe they had sufficient communication skills. They also found that pain changed their communication. The participants were concerned about how others would react to their communication about pain. They often avoided communicating about their pain or communicated about it indirectly. For example, participants stated: “pain must have been discussed at home but only very, very briefly” and “I just kept my pain to myself, and I still find it very, very challenging talking about it to anybody ... at this level we never communicated”.

The participants reported wanting to be able to communicate effectively and feel understood. They tried not to put themselves into situations where communication might be difficult or where they might

be rejected. For example, one participant stated: *"I thought, 'I don't want to do that, someone I can't communicate with'"*. Often the participants had rules about communication, including who should start the communication process. Usually, they placed the responsibility on others to communicate with them. There were certain topics that they would, or would not, speak of. Both of these strategies were probably used to avoid rejection. Examples provided by the participants included: *"no one had asked me"*, *"because mum and I had never developed that good communication of my needs to start with, that was even harder when we were that many miles apart and on the telephone and when I'm depressed, so there was no way any of that got through"* and *"I kind of really like people to ask me about it because I like to talk about it"*. The participants were concerned about the consequences of communicating, especially that others would not understand them or that they would not want to hear what they had to say, and perhaps then reject them. This was expressed by many participants. Examples included: *"I tend to feel like I am going on"* and *"it is very difficult for me to say ... I kind of feel like I don't want people to think that I'm looking for sympathy"*.

Communication difficulties were common within intimate relationships. The participants often described being oblivious to any difficulties in their relationship until their partner left. Communication was especially difficult when their immediate family was involved. A typical example one participant stated: *"I became sort of cut off from them and as a result, I've never ... I have never communicated how I have felt and stuff with my family"*. Expressing negative feelings was especially troubling for the participants. This may again have been due to their fear of rejection.

3.4.6 CONFLICT RESOLUTION

All of the participants described having difficulty resolving conflict, a difficulty that had been present from a young age. Many also discussed being very passive in their interactions with others. They usually avoided people or situations to avoid having to resolve conflict. Alternatively, they expressed their needs indirectly, without directly addressing the issue concerned. This happened across a wide variety of situations including work, social and family situations. The participants also described having difficulty being assertive about their rights and needs. For example, one participant stated: *"they wanted me to do the [work], they wanted me to do it and they didn't hear me say 'No', I had to do it, I had to write and prepare the whole [work] and do it, it took the whole day"*.

Interestingly, given the reported conflict within the participants' families, the participants often felt responsible for holding their family of origin together. They reported finding it difficult not to undertake this responsibility, and while they reported wanting to share the responsibility with other members of the family, they were not assertive enough to ensure that this happened. Examples provided by the participants included: *"I was the only one left at home and I thought it was my responsibility to look after them"* and *"I kind of had to, I held the family together"*. Despite a strong need to hold their family of origin together and to look after their parents, the participants often found the relationship with their parents difficult. They were unable to resolve the differences between themselves and their families. Often this conflict was described as stemming from differences in religious beliefs. The following quotes are from discussions about friction between the participants and their parents:

“there are still differences”, “he doesn’t care anyway”, “after much resistance from dad” and “my parents ...are still involved in the church ...and I’m not, so that causes a slight [indicating much] strain”. The participants often put their parents’ needs before their own, even if this significantly inconvenienced them. Although the participants reported spending a lot of time and energy doing things for their parents and family, they had great difficulty asking them for any kind of help. An example of asking for help is illustrated in the following quote: *“for the first time in my life I had to ask my own family for help, which I have never ever done before”.* The participants demonstrated an unwillingness to resolve conflict. This caused them much difficulty and significant extra effort in their avoidance of conflict.

This lack of conflict resolution, and resentment of the situations in which the participants found themselves, also occurred in their interaction with health-professionals. This increased their likelihood of developing and maintaining chronic pain, as they did not resolve any differences of opinion they had about appropriate treatment.

3.4.7 AFFECT REGULATION

Participants described difficulties in regulating their affect and expressing their emotions. They appeared to have few affect regulation skills, tending to avoid, and rigidly over-regulate, rather than manage, their emotions. The strategies that they chose tended to be maladaptive in the longer-term, or they interfered with other aspects of their lives. They tended to use the same strategies over and over again, in a perseverative way, regardless of their lack of effectiveness. Workaholism and perfectionism are two maladaptive and rigid ways the participants regularly interacted with the world which influenced their affect regulation. These are discussed below in sections 3.4.7.1 and 3.4.7.2.

The participants described not having effective affect regulation skills and failing to effectively address their emotional needs when they were young. This situation continued into adulthood. One woman said after a death: *“my family are not very emotional, at least with each other so it was really difficult for us, so it was kind of really strange ...we would all sort of sit in the same room ...on our own just kind of say nothing, it was really weird”.* Many of the participants were comfortable having their physical needs met, and they believed that this was appropriate. Conversely, they often did not acknowledge or accept their emotional needs. This usually followed a pattern set in their current family and their family of origin. For example, one participant said: *“I have never communicated how I have felt and stuff with my family”.* It appeared the participants identified only physical things as real. Emotions were not considered “real” experiences, and therefore they were not considered to be important. They reported thinking that sharing and caring should only be shown in terms of physical effects (primarily financial or material effects) and not emotional expression. Similarly, some experienced difficulty receiving anything that they did not pay for in physical terms, even in close relationships. Love and support were frequently shown by physical means; this often involved money. An illustration of this included: *“at the end of that year I had real things to really make me pick up a bit”.*

Many of the participants described showing little emotion to other people. Some described knowing

how emotional expression "*should be*" but not being able to carry it out. Those that did not place a high value on their emotions or emotional needs were often intolerant of themselves or others expressing emotion.

To avoid addressing and acknowledging their emotions the participants used isolation (see section 3.4.3). For example, one participant stated: "*I've sort of closed down ... the more that you try and persuade other people with your actions and that, the more you persuade yourself*". Sometimes the participants would only express one emotion or they would express positive emotions and avoid negative ones. When the participants reported becoming emotional, it was presented as negative rather than positive. An example of this included: "*I still get very emotional about it*". Many reported not wanting to express emotions, even those with "good" reasons, such as loss. They viewed the expression of emotion as a weakness. For example, one participant reported: "*oh, initially it [separation from husband] was a problem, probably for about three weeks, then it didn't bother me, in fact it might not have even been three weeks*". One participant described difficulties expressing emotions as an adult. She said: "*I have restricted my normal reactions and my normal feelings about things ... I have squashed them all*".

Many of the participants reported difficulty eliciting emotional support from others. One participant talked about not giving or receiving hugs in their family. She said: "*we have very little physical contact in our family*". Others were more ambivalent as to whether they wanted or needed emotional support. They were critical of others getting their needs met. The following participant resented her parents getting their emotional needs met by their friends when her sister died. She said: "*it was quite difficult, in the first week, my parents had friends around the house constantly*".

Participants commonly reported helplessness and powerlessness. Usually this was because of their pain and resulting disability. Typical examples included: "*getting in and out of baths is difficult ... it is ridiculous how helpless and weak I feel*" and "*it's a complete feeling of helplessness*". They also reported feeling useless because they were unable to perform many of the activities that they had previously taken pride in completing. A quote from one participant included: "*I feel guilty about that too actually ... I would feel like an, um, useless person and not able to have any energy in the evening ... [to] get the meal together and stuff*". Their helplessness extended beyond physical activity to not being able to manage their emotions. Many reported feeling very angry but that they could not do anything about their situation.

Pain was seen by the majority of participants to be an embarrassing and negative attribute. This was especially true when it was accompanied by disability and they had to tell others that they could not do things when they were asked or they believed that they should be able to do them. This was clearly stated by one participant who said: "*someone will say 'will you come over and give my car a push' and I know that I can't do that, and they will look at me and say, 'he is as fit as a boat wreck'. It is also to do with over the years I have pushed and pushed about people who don't work. And now I fall into the trap of not being able to work at the moment. And I find that very embarrassing too. It is only in the last year that I have gone out during work time outside, which is ridiculous really, if you look at it, but it is how I feel*".

Mental illness, especially depression, was one of the difficulties commonly associated with pain. This is illustrated by the following quotes: *"I resigned because I was mentally ill"*, *"I'm still trying to get over a heavy heavy, I had a large dose of clinical depression"* and *"I didn't care ... I just wanted to die"*. The participants often described external reasons for symptoms of depression. Examples provided by the participants included: *"[partner] had applied for a job and not got it"*, *"it [pain] had taken over my life totally"*, and *"I am unemployed"*. Some of the participants discussed the ways and reasons for managing their mental illness. For example, participants reported: *"if I hadn't taken the pain away last year I don't know if I would still be here today"* and *"the only reason that I carried on was because of my wife and daughter"*.

Anxiety and fear were also particular emotions with which participants identified. Typical examples of this included: *"I mean phobia in the psychological sense ... I can feel my self going flushed ... I have [a] panic attack"* and *"I have an enormous fear of the hospital system, I sort of break out in a sweat when I go to a hospital ... I hate it"*. Difficulties with drugs and alcohol provided further problems. An example provided by one participant included: *"I have got a drug trouble and nothing seems to work"*.

3.4.7.1 Workaholism

Work was very important for nearly all of the participants. For many, it provided an important means of affect regulation. It was significant in their self-definition and in maintaining their self-esteem, as well as providing a source of social interaction. The participants described having previously been very successful at work and achieving highly in their particular field. For many, work represented their life focus. They found it particularly difficult when they were no longer able to work. They were embarrassed by their pain, particularly when they were not able to do things that others asked or expected of them. These feelings appeared to arise from their concerns that others would not believe they were really in pain.

Nearly all of the participants worked very long hours prior to the onset of their pain and many continued the long hours post-onset of pain, through the development of chronic pain. Often they reported attempting to do too much work. This caused additional pain and injury. Some of the participants labelled themselves as a *"workaholic"* or described these traits. This is shown in the following quote: *"it was amazing really that I didn't take any time off work, but that reflects the type of person that I am"* and *"someone gave me an article the other day and I am the typical type, overworked, over-everything"*. For many of the participants, work was the most important thing in their lives, and it always had been. Concern over their ability to ever work again increased the stress in their lives, as the following examples illustrate: *"that is another thing that I worry about ... one of my biggest problems now is will I get back into the work-force and if, where, I could never go back into the work-force as a never-never person"* and *"it's always been work, you know, trucks, it's always been work, so this is why I don't like where I am at now. I hate it"*. Many described their former work as a source of enjoyment. Typical examples included: *"I was making farm machinery, I was fixing and welding, I enjoyed doing that"*, *"it was something that I had been wanting to do ever since I was a*

little girl, and I loved it" and *"I took to teaching like to water, like a duck"*. Work was important for the participants as it provided significant meaning in their lives. It provided efficacious and independent feelings. For example, one participant stated about finding work: *"I wanted to be independent"*. Much of the participants' self-esteem and self-definition was derived from their work, and their performance at work. This was a particular difficulty for the participants who had to cease working or who had to significantly change in their working circumstances. Typical examples included: *"I had me old foundations kicked out from under me"* and *"I've always worked for money"*. Work was often the participants' sole activity. They spent a large amount of time at work, to the exclusion of other activities. In addition, work provided a large and sometimes the only source of social activity.

When pain forced participants to leave their paid employment, they found this extremely difficult. For example, *"accepting that sort of thing, it's hard, it is, it really is"*. Many were also concerned about never being employed again. One said: *"at 41 you have got a hell of a small shot of getting back in"*. Success at work was reported by most. Examples provided by the participants to illustrate this included: *"I ran a very, very big business in the end"* and *"I did extremely well ... I was number one in the whole country"*. The desire to achieve, particularly in the work environment, was commonly reported. Quotes which illustrate this included: *"it was a thirst for making money"* and *"I am very goal focused, I have to be best"*. The participants talked about pushing themselves very hard to achieve. This extended to a range of activities, however it was usually work-related. Examples provided by the participants included: *"sometimes my injury is superseded on occasion by the needs of other people"*, *"I was going to work one day and I collapsed at the wheel of the car ... it was due to ... pushing myself too much"* and *"I just couldn't stop working"*.

Immediate return to work after pain-onset or some treatment was common. The participants spoke about this as if they were proud of the fact. Typical examples included: *"I was back on the job in 24 hours from fixed [operation]"* and *"it was amazing really that I didn't take any time off work"*. With the absence of an immediately obvious source of pain or injury, many participants thought that others would not believe they were in pain and would attribute their behaviour to some negative factor. For example, one participant stated: *"I know that it sounds like a fairy story"*. The desire to avoid losing face among peers often led to the participants lacking assertiveness when asked to do something, even if it was beyond their current abilities or would take an extreme amount of time or energy. An example of this included: *"I would almost rather hurt the darn thing than waste my breath explaining that I am sorry but I have a sore knee"*. Usually, they tried to continue as they had prior to their pain-onset, especially in the early stages of their pain process. Eventually, many participants gave up working because of their pain.

3.4.7.2 Perfectionism

Striving to be perfect in whatever they were doing was another common theme for participants. This trait was shown from an early age, as discussed in the background / vulnerability section (section 3.2). This often related to the participants working very long hours. Habitually, they felt a failure if they did not complete everything perfectly. Some described themselves as *"perfectionists"*. Examples of

this included: *"I guess I am a perfectionist, and always have been"* and *"I've always been a bit of a perfectionist"*. They described how acting in this way increased their chronic pain and disability. The following quotes illustrate this: *"I push myself too hard that's all. I finished up in hospital quite regularly by over-doing things. Trying to prove that I could"*, and *"I have got this ding dong thing in the back of my head telling me things have to be done regardless, no matter how bad I felt ... I would just have to do it"*.

In summary, the participants all reported some difficulties with affect regulation and described the ineffective ways they had attempted to manage their affect. Many held strong beliefs regarding the validity of meeting their emotional needs. They clearly distinguished their emotional and physical needs. Typically, their physical needs but not their emotional needs were met. They placed little value on their emotions or emotional needs. Often they would avoid their emotions, even at considerable cost to themselves. As a result, the participants expressed little emotion. They also experienced difficulty eliciting or receiving emotional support from others. The participants felt powerless and acted passively towards others. Many suffered from mental illness; particularly common were depression, anxiety, and drug addiction. They used rigid strategies to manage their affect, including working extreme hours and needing to be perfect at everything that they did.

3.4.8 ILLNESSES AND INJURIES

The participants reported many other illnesses and injuries besides their chronic pain. The impact of mental illness has previously been discussed in section 3.4.7. Examples of the complaints reported include: *"I ended up being very sick, I got very depressed and very sick, my health just fell"*, *"epilepsy leapt in there in June"*, *"I have got arthritis in my fingers"*, *"a couple of years ago I hurt my back"*, *"I can't use my left hand for too long because my cartilage and ligaments were torn here [in left hand] in a car accident last Easter ... also my neck ... I already had a bad neck, I knocked my self out by falling backwards the year before that"* and *"I dislocated my knee"*. It appeared that once a participant suffered from chronic pain from one illness or injury, many subsequent illnesses or injuries also led to chronic pain. It was uncommon for the participants to have only one type or location of chronic pain.

In some situations, the illnesses and injuries led to positive reactions from others. Illustrations provided by the participants included: *"the family are good if it [pain] happens ... she understands"*, *"I see my sister, yeah, and [daughter], I see her twice a week and phone calls every day"*, *"I have a sister that looks after me"* and *"people have been terribly supportive, on various occasions, and understanding. My [work] have been terribly supportive"*. These reactions may inadvertently have helped to maintain chronic pain and disability.

3.4.9 PATHWAYS FOR PAIN AND DISABILITY MAINTENANCE FACTORS

The pathways through the pain and disability maintenance factors (see figure 3.4) are similar to those described in the background / vulnerability section. They are directly developmentally linked and the constructs of each are similar. Again, there are an infinite number of possible pathways given the

continua. For the sake of illustration three will be described. Again, these are not gender related but for ease of description specific genders will be used.

First a description will be given of a pathway through the left-hand side of each continuum. In this hypothetical case the person would have a low level of unhelpful background / vulnerability factors. His view of the world and of others is likely to be positive and he would have positive interpersonal interactions. He would trust that others would be available to help him and that life-events would be mainly positive. He would have a positive view of himself and his ability to manage situations. He would believe that his level of skill was such that he could effectively manage situations, or obtain assistance to ensure a positive outcome. This hypothetical person would have a wide range of intimate friends and acquaintances with whom he was regularly in contact, and with whom he participated in many activities. He would believe that these people would be available if needed. He would have a high level of personal and interpersonal skill and be confident in his competence in a wide range of situations. He would have good communication skills and therefore be able to assertively get his needs met. He would effectively resolve conflict. His affect regulation skills would be effective, flexible, and adaptable. He would have few ongoing illnesses and injuries, he would use appropriate strategies to manage these and seek assistance when required. These skills, ways of interacting, and self-beliefs would place him in the best possible position to manage his pain and functioning. He would make the best possible use of assistance, so his pain would not be maintained and there would be minimal, if any, disability present. A hypothetical person travelling the left-hand side of the model would continue to effectively participate in his life.

A second pathway passes through the middle of the continua. In this hypothetical case the person would have a medium level of unhelpful background / vulnerability factors. These would influence her self-schema and how she viewed and interacted with others and the world. As a result, she would expect some positive outcomes from her interactions with others and the world. However, she would not be confident that the outcome of a situation or her interaction with others would be positive. Her self-view would also have some positive and negative aspects. She would have a limited number of intimate friends and acquaintances. Those she did have, she would have limited trust in, and spend only limited time with them. Therefore, she would experience some loneliness and isolation. She would have limited confidence in her competency to use personal and interpersonal skills effectively to manage herself and interact with others. She would likely be occasionally assertive in her communication and conflict-resolution, but not have much self-confidence in these situations. She would fear rejection, particularly in specific situations. Her rudimentary affect regulation skills would be sufficient for general situations, but lack flexibility or the level of skill to manage all or even most situations effectively or with confidence. She would have experienced some other illnesses and injuries, some of which would cause ongoing difficulties as a result of her lack of use of appropriate strategies. As a result, her chronic pain might be maintained, with some disability and the possibility of additional chronic pain and/or disability.

The third hypothetical pathway travels through the right-hand side of each of the continua. In this case the hypothetical person would have a high level of unhelpful background / vulnerability factors.

These would have a consistent effect and continue developmentally through his adulthood years. As also found in his background, he would have a negative view of others and the world. He would not be confident that others would help him or that situations would have a positive outcome. He would lack confidence in his own ability to affect the outcome of situations positively. He would have a very negative view of himself. As a result of these negative views of himself, others and the world, he would be likely not to trust others or interact comfortably, because he feared rejection. Therefore, he would be socially isolated and feel lonely. He would have a low level of social skills. In addition, he would not use his interpersonal skills to interact with others for fear of rejection. He would fear communication, and because of this, he would lack practice, further degrading his communication skills. He would be unlikely to express his emotions verbally; instead he may express them as physical ailments. He would be likely to fail to communicate, instead acting passively, at the same time feeling resentful and frustrated that he is not understood and his needs are not met. This would also apply to him evading resolving conflict. He would avoid conflict, and conflict-resolution, at all costs, through fear of rejection. His poor affect regulation skills would not be effective to manage this, resulting in a high level of negative-affect. His skills are likely to be limited, rigid, and inflexible. He would tend to rely on only one method of affect regulation such as working very long hours or attempting to do everything perfectly. He is likely to have other illnesses and injuries and also manage these ineffectively. This would lead to further chronic pain. Thus, his chronic pain is likely to be maintained, or even increased, and include a high level of disability.

Obviously, a hypothetical person could be placed anywhere on each of the continua. This creates an infinite pattern of possible pathways. A person's pain management and level of pain and disability will depend, in part, on their beliefs, experiences, and skills described in this section. Their place on each continuum could change over time, depending on their circumstances and experiences. Indeed the participants described being at different positions on the continua with different outcomes. However, for the participants in this study, their individual positions on the continua appeared to be relatively stable over time.

3.4.10 SUMMARY OF THE PAIN AND DISABILITY MAINTENANCE RESULTS SECTION

This section describes many of the factors that were present in the participant's lives as their chronic pain and disability was developed and maintained. These factors are not specifically pain-related, however they contribute to the maintenance of pain and disability due to their influence on an individual's beliefs, emotions, and behaviours, which may impact directly on pain management.

These factors are very similar to those discussed in the background / vulnerability section. They follow directly from those in the background / vulnerability section, and are an extension of these with the addition of further experience. Ideas discussed in this section stem from the participants' view of themselves, others, and the world. For people who have developed and maintained chronic pain and disability, these views were generally negative. They impacted on their interactions with others. Social isolation is common amongst those suffering from chronic pain. The participants did not believe that they had the necessary skills for social-interaction, and consequently they had

difficulties with communication and conflict-regulation. They also struggled with the rigid strategies they employed for affect regulation.

3.5 MANAGEMENT OF CHRONIC PAIN AND DISABILITY

This section on the management of chronic pain and disability considers how the participants manage their pain and functioning in the chronic pain phase. This is illustrated in figure 3.5. For this study, this period commenced six months after the onset of pain. To begin this stage the person must be currently experiencing chronic pain. The pain experience influenced the person's implicit theories, primarily those related to pain and pain management. These, in turn, contributed to the choice of a pain management strategy. This decision was also influenced by several other factors, including the constraints upon the participants, or at least their perception of these constraints, the influence of others and health-professionals, and where they were in their treatment or management progression. The strategies chosen by the participants are separated into three broad categories: "under-regulation", "mis-regulation", and "appropriate-regulation".

Under-regulation strategies were further divided into two styles. The first style is designated "no management", and the second style "focus on function". A person who believed that their pain did not cause them difficulty might choose to not attempt to manage their pain. They would then exhibit a passive response to their pain. Focus on function strategies were employed when the person actively focused on their everyday functioning at the expense of their pain management.

There were three styles of mis-regulation strategies. The first style was "counter-productive strategies". These strategies usually worsened the problem, although they might initially seem to be useful strategies. The second style included "pain-focussed strategies" which had a short-term emphasis. Their excessive focus on pain, to the detriment of other functioning, was not well balanced. The third style included strategies that did not immediately appear to be mis-regulatory. They had a negative outcome because there was a mismatch between the strategy used and the pain situation it was used in, therefore they were described as having an "outcome problem". This third style can also be located under the appropriate-regulation category as these strategies are often appropriate strategies, the difficulty being an outcome-problem. The other style of strategies under the appropriate-regulation category was that of "appropriate management". The strategies used in this style emphasised long-term functioning, while still emphasising pain management. It appeared to be the "best-fit"; managing both pain and functioning.

Over time there was an outcome as the result of the implementation of the chosen strategies. Most of the participants discussed outcome in terms of short and long-term effects, and consequences of their pain and the management strategies they employed. Outcome was measured on a continuum, anchored with the endpoints of dysfunctional chronic pain and no chronic pain. An outcome of "no chronic pain" was a theoretical construct not observed in this study due to the selection criteria. At times, some of the participants approached this endpoint. The midpoint for this continuum was successfully managed chronic pain.

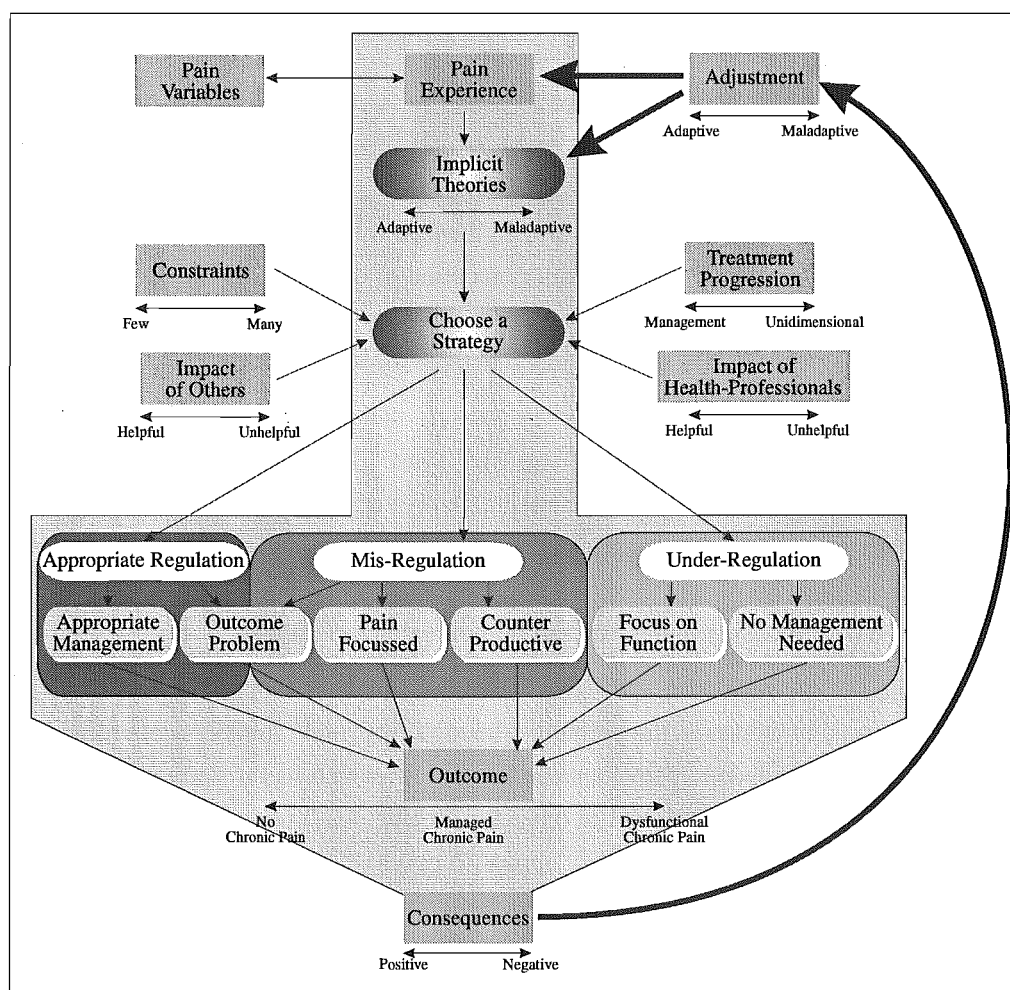


Figure 3.5: Management of Chronic Pain and Disability.

This figure shows the process involved in the management of chronic pain and disability. The participants pass through this process many times as their chronic pain continues, thus moving through the feedback loop of the process. They may choose similar or different strategies each time they move through this process.

The management process is a continuous process. It evolves with time. As a person chooses and implements a strategy they will experience the resultant outcome. This will affect them and in turn affect their choice of further strategies. This is an iterative process with a feedback loop. As part of this management process, the participants made an adjustment to themselves, their lives, circumstances and implicit theories. This was based on their experiences, particularly the outcome and consequences of their chronic pain. This adjustment was primarily related to the constructs of trauma, loss and grief. However, it also led into the beginning of another discrete passage through this process. The participants' adjustment influenced their implicit theories and thus influenced this whole management process. Therefore, whether the participants' implicit theories stayed the same, or changed, influenced the management process, and thus outcome. The desired goal is no pain or disability; the next best outcome is managed chronic pain.

3.5.1 PAIN EXPERIENCE

A pain experience, or pain episode, can be defined very generally. For this study it was sufficient that each participant was experiencing pain. As the participant's management style, implicit theories, or pain experience changed they might re-enter the chronic pain management phase at the pain experience point. This might happen many times. Typically the participants pain could not be measured discretely in time. They may have been suffering from ongoing pain, which may or may not have been exacerbated.

3.5.2 PAIN VARIABLES

Three significant groups of pain variables were reported:

1. The site of the pain.
2. The descriptors used for pain. These were almost entirely physical in nature, having little emotional content.
3. The type of pain. This was sub-divided into constant and fluctuating pain. Constant pain was described as always being present regardless of interventions and other variables. Fluctuating pain was described as being superimposed on constant pain, and to be variable in nature.

These pain variables were intricately linked. The site of pain influenced the descriptors used to describe pain and its intensity. In turn this was linked to pain comprising two components; constant and time-varying pain. The latter was affected by both physical and emotional factors.

SITE OF PAIN

The participants reported varying locations of their pain. This variation did not appear to contribute to the processes identified as being involved in the development and maintenance of chronic pain. The site of the pain was generally in the limbs, head, or spine and surrounding soft tissue. The participants were often very specific as to the exact site of their pain, citing specific structures. They would state

that it was “*joint pain*”, “*ligament pain*”, or “*nerve pain*”. This possibly reflected their understanding of the physiological process involved in their pain, or the implicit theories they held to explain their pain experience. These understandings, and hence the implicit theories underlying them, were not always accurate.

The original site of acute pain was often not the same as the site of chronic pain. The latter usually covered a larger area, possibly with more sites, or occasionally an entirely different site from the initial injury. Nearly all of the participants reported more than one type and/or site of chronic pain. These were either all related to, or extending from, the same injury or illness, or more often, several different types or locations of pain, which had originated from different sources or injuries that occurred at different times. As time progressed, the participants generally reported chronic pain in other sites, in addition to the original site.

DESCRIPTORS OF PAIN

The pain experience was identified and described in both qualitative and quantitative terms. The participants explained how their pain changed over time. This almost entirely involved physical, rather than emotional descriptions. This may have been an artefact of the task-demands of the research interviews that were conducted, although the lack of emotional expression is consistent with their reports of other situations and other times in their lives.

Pain-intensity was described in many ways. Some participants used a numerical scale, which they used over time to track their progress. This was especially in the early stages of the chronic pain process, when they expected their pain to be improving, although it was often actually worsening. Others described the intensity of their pain in terms of whether it was tolerable or not. Some described their pain using general terms, such as, “*a lot of pain*”. Another technique was the identification of best, worst, and average pain-levels. The participants compared these with their present pain level. The intensity of pain also provided an indicator as to whether a pain reduction strategy was needed. The participants would use a pain management strategy when experiencing a high level of pain intensity.

All participants described variations in their pain over time. These varied from the short-term, pain experienced for a number of minutes, hours or even days; to long-term, which were typically reported as having occurred over a period of weeks, months, or years. Their pain variation was reported in terms of intensity, quality, and the degree of disruption to their lives. The one constant factor reported by all participants was that the pain never completely disappeared. For example, a participant stated: “*its just ongoing, with different stages of it*”. While there was great variation in the amount of pain experienced at any one time, the overall pain experience was reported to be increasing. A typical statement by participants included: “*the pain just got worse*”.

The participants used a multitude of words to describe their pain. Words used to describe pain sensation included: “*aching*”, “*bruising*”, “*cramping*”, “*shooting*”, “*graunching*”, “*loss of sensation*”, “*numbness*”, “*pins and needles*”, “*sharp*”, “*spasm*”, or “*tingling*”. Emotive, physical, words were used to describe the effect of pain, including: “*fatigued*”, “*sore*”, “*stiff*”, and “*tiring*”. The location

of the pain was described, including whether it was “*radiating*” or “*spreading*”. Explanations were frequently offered for the cause of the pain in terms of their understanding of the pain or their implicit causal theories. These included: “*nerve pain*”, “*muscular pain*”, “*it feels like bones or muscles or tendons or ligaments, that are damaged*”, “*like a sprained ankle*”, “*like lack of circulation*”, “*swollen*” or “*spasming*”. Many described their pain in terms of other analogous painful conditions, such as, “*arthritis*”, “*electric shock*”, or “*like joints coming apart*”. This again demonstrated the potency of underlying explanatory theory to account for the cause of their pain. Pain was also described in terms of consequences. These usually included disability and the loss of function. For example, the participants described the body part as being “*weak*” or they described activities that they could no longer participate in or achieve.

CONSTANT PAIN WITH FLUCTUATIONS

The pain experienced by the participants can be best described as having two components. Firstly, an underlying constant pain that was described as never varying. For example, one participant stated: “*the joint pain which is constant more or less, doesn’t fluctuate much, has been the same for all this time*”. Secondly, a variable and periodically fluctuating component. Illustrations of this included: “*it can fluctuate within a day, within an hour*” and “*that can go from very, very little pain to quite considerable pain in a very short time*”. The fluctuating pain served to increase the constant pain.

The participants all reported daily cycles to their pain. Most commonly, the pain was at its lowest when they first got up, or soon after, and it steadily worsened during the day. An illustration of this included: “*its general kind of pattern would be going up towards the end of the day*”. Superimposed on this daily cycle were additional fluctuations that the participants reported being caused by them performing activities associated with daily living. These activities generally increased their pain. Rest, and management strategies prescribed by health-professionals (such as medication or physiotherapy), were most commonly described as minimising pain. The following description is a slightly more complex cycle, typical for one participant, where indications of pain are based on a scale from 1-10: “*it would normally sit about a five when I get up, then it would come down to sometimes a two, but most likely a three and a half, four, and from there it would just creep up during the day depending on what I am doing*”.

3.5.3 IMPLICIT THEORIES

The participants used many mental constructions of pain, or implicit theories about pain. These can be broadly construed as belonging to three areas, those that relate to the participants themselves, those that are pain-specific, and those that relate to how the participants think others construe pain in general, and more specifically, their pain. These three areas exhibit much overlap and interaction as can be seen in figure 3.6.

These implicit theories were clearly voiced thoughts and beliefs that were consistently present, both within and across participants. These are discussed below with indications as to how they affect the management of chronic pain.

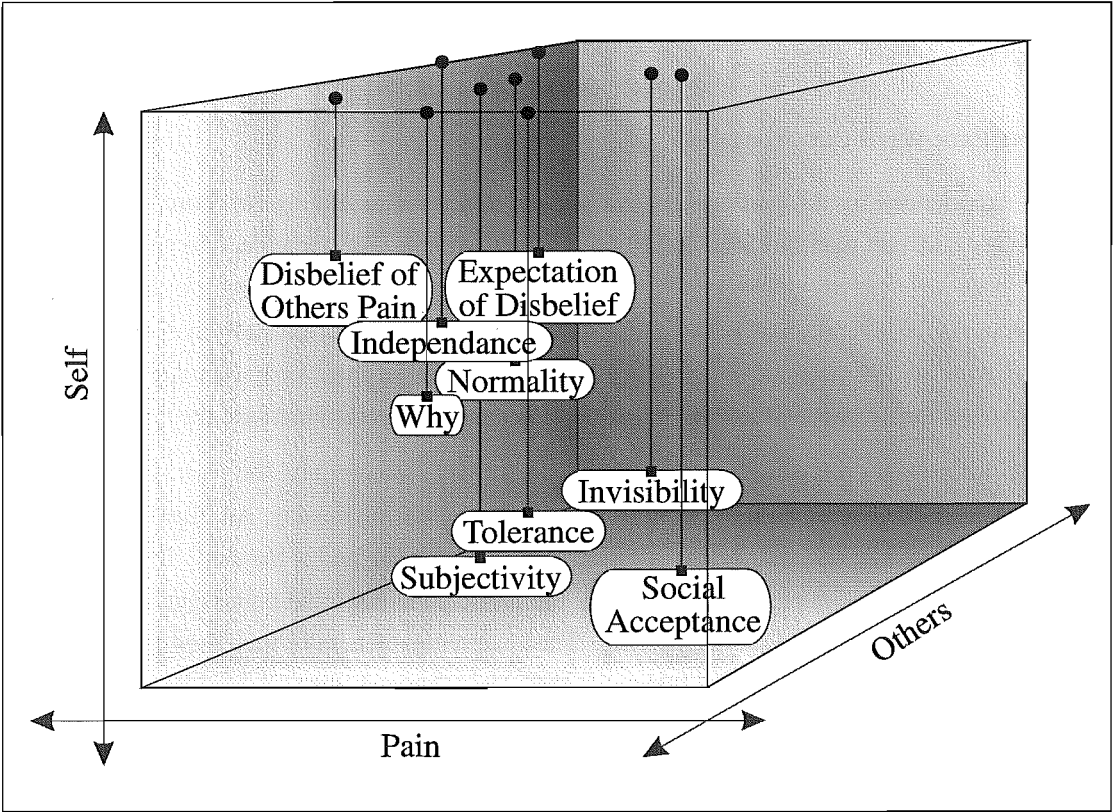


Figure 3.6: Three Dimensions of Implicit Theories of Pain.

This figure shows the three different dimensions of implicit theories and where different implicit theories might fit on these dimensions.

WHY

Each of the participants at some stage asked “why?” as they searched for meaning of their pain and the changes it had caused in their lives. This was expressed as: “*why did this happen to me?*”, or “*why isn’t it better yet?*”. One participant said: “*its almost like it is unfair, people who don’t do anything don’t have any injuries and here’s me, that is when I was really doubtful about the whole thing*”. The search for an answer was not limited to the participants. Others also asked “why?” of the participants. This was particularly difficult for them. An illustration of this included: “*I think just the worst, the most frustrating thing is like people go ‘why isn’t it better now?!’, um, I mean, I can’t give an answer*”. The participants were searching for an answer as to why they were affected by pain and not someone else. They were particularly interested in why it was not better now, especially when many of the doctors’ prognoses had predicted that their pain would be better a long time before the interview. This affected their management, because when they were asking “why?” they sometimes reported “*trying out*” their pain and injury to see if it was real. This usually caused additional injury, thus being ineffective in managing their chronic pain. In addition to this consequence, the “why” question led the participants to seek additional information and/or create ideas and beliefs about the cause of their pain.

INDEPENDENCE

Many of the participants came to the conclusion that pain was specific to them and that it affected only them. They thought it was their issue and it did not belong to anyone else. The participants were usually unaware of the effect that their pain had on others. Therefore, they tried to keep it to themselves. Examples provided by the participants included: “*I was becoming more independent anyway and I had got to the point when I thought that is was my issue and no one else’s*” and “*I have to deal with on my own*”.

This obviously contrasts with the difficulty that some participants had, at times, of relying totally on other people. When the participants went through this stage, accepting no help from others, they attempted to live their lives on their own. This attitude was not functionally adaptive in the longer-term. It often led to isolation and ineffective pain management as the participants frequently attempted activities that caused further long-term pain.

NORMALITY OF PAIN

For many of the participants pain was a “normal” part of life. This view is seemingly opposed to the idea of the specificity of pain. The participants perceived their pain to be “normal”. Often this was because they had encountered models of chronic pain behaviour in their background, or they had experienced pain problems for many years. For example, one participant stated: “*by the time I was 11 years old it was normal ... to have pain*”. The advantage for the participants of considering chronic pain to be normal was that they did not perceive themselves to be abnormal. This was important for the participants who were striving to fit in with society. This belief meant that they did not feel left out or isolated, which probably reduced their disability. However, this belief might have also

increased disability for some of the participants who considered functional disability to be a “normal” consequence of pain.

SUBJECTIVITY OF PAIN

Most participants had thoughts about the subjectivity of pain and the fact that there was no objective way of measuring how much pain they were experiencing. Associated with this, was the fact that participants often did not feel that others understood their pain unless they had experienced something similar themselves. Illustrations of this included: *“someone who is not involved in sport and has not had any problems or what ever, there is a complete lack of comprehension”* and *“I don’t think that most people do [understand], I mean they don’t have the problem so why should they”*. Therefore, these participants did not share their pain for fear of not being understood. As a result, they potentially missed out on the normalising aspect of discussing their pain. In addition, they would not have recognised other people having chronic pain with little disability.

Participants often did not trust that others believed in the authenticity of their pain. They expected them to think that they were making it up for some benefit of their own. They were also very suspicious of “psychological research”. Examples of the participants responses to the authenticity of pain included: *“others are like um oh OK (indignant) and a lack of comprehension”*, *“at the end of the day, you walk in somewhere and no one knows there’s anything wrong with you”*, *“I reckon that it is a physical thing I really do, I think that there is something physically wrong, it can’t be, it can’t be just [in my head]”* and *“it is still sore and I am quite sure of it”*.

INVISIBILITY OF PAIN

People, in general, cannot see that somebody is suffering from chronic pain or its effects. There is often evidence for acute pain, such as hospitalisation, a plaster cast, or a sling. However, chronic pain is mostly invisible, despite the person being unable to function fully. As a result, the participants were constantly confronted with situations where they perceived that other people thought they should be able to do something when in fact the pain made this difficult or impossible. They then either tried to explain their way out of the situation, which they generally found embarrassing, or they continued with the damaging task. An example of the one participant’s struggle with the invisibility of pain is illustrated by the following quote: *“you walk in somewhere and no one knows there’s anything wrong with you, and I would prefer it if I had two legs in plaster and were on crutches totally, because everybody sort of says, you know, you’re sick ... they [children] don’t always understand, they really don’t you know, it’s really difficult, ‘why can’t I be like everyone else’s dad’. It is, it is really difficult”*. This led to ineffective management of pain as the participants regularly did not explain their painful position. They either avoided situations where they might be asked to help or explain, or proceeded with the activity, to their physical detriment.

TOLERANCE OF PAIN

The participants were aware that different people can tolerate different amounts of pain. For example, one participant stated: *"different people must have different levels that they can accept pain"*. They reported that they would have liked to have some kind of instrument to compare how they were tolerating their pain against others. Participants reported being pleased to hear health-professionals, and other people, validate their pain and tell them that the pain they felt was in fact real. They reported acceptance when a reason was found for their pain. For example, one participant said: *"he [specialist] couldn't believe that I had been able to do anything at all ... it was very validating, and that was, yeah, that was good ... it makes you feel 'oh yeah it's real'"*. Often the participants reported needing external validation of their pain. This may have increased their likelihood of initiating health-professional management or changing to a health-professionals who was more validating.

SOCIAL ACCEPTABILITY OF PAIN

Most of the participants reported that being in pain, or more particularly, the functional limitations associated with pain, were not socially acceptable. Many of the functional limitations were related to everyday activities which most people take for granted, such as lifting or writing. For example, the following quote illustrates such a limitation: *"I find it hard and I can't hold a pencil"*. There were some things that made the pain feel more acceptable to the participants, such as not being responsible for the cause of the pain. For example, one participant stated: *"if I had been a drunk and run into a lamppost or car and had the same results then ..."*. Many of the participants felt a stigma about being in pain, and that, in some way, it made them a lesser person. How others viewed their pain concerned them. They generally preferred other people not to know about it. This created difficulties when their pain prevented them from doing an activity that another person expected them to be able to do.

Some participants were very concerned about what they considered to be deformity and scarring. However, in all cases, this deformity was not immediately obvious to the interviewer. An example provided by one participant included: *"I was developing a deformity as my elbow was growing ... it doesn't sit the same at all, the elbow joint looks different and is at a different angle and that lump there is quite wide it is much wider here than there"*. This participant felt that other people reacted to her deformity. This affected how she interacted with others and often led to the avoidance of people and consequently, isolation. In turn, this isolation led to avoidance of many of the social components of successful pain management and functioning. Additionally, some of the participants had completed, or were contemplating surgery to reduce this perceived deformity or scarring. Those that had completed this surgery often reported increased pain and/or scarring as a result.

DISBELIEF OF OTHERS' PAIN

It is interesting that most of the participants were very critical and disbelieving of other people's pain. They expected others to also abide by their own perfectionistic beliefs and strategies. They were particularly critical if others did not meet their standards of behaviour. They often projected the rejection they feared about their own pain onto others. In this following example, a participant was

talking about his mother's arthritis pain: *"I have talked to the doctors and all that about her and they say ... she has got it is like chronic, you know she has really got it bad, so perhaps it is an unfair thing, but I still sort of don't accept that ... half the time I don't even think that she has got it you know ... but you know you can tell really that she has"*. Because the participants were critical about other peoples' pain this may explain why they felt so concerned about other people not believing in their pain. They found it very difficult to comprehend the pain that others experienced, even though they had pain themselves. An example of this included: *"I can understand but ... I can't say like, I feel what you are feeling, it is not true"*. They were also very confused about how to treat people who were in pain. They believed that others did not have pain like theirs, that they were unique, and that therefore no one could understand them. Because they were concerned about how others would interpret their pain, the participants may not have completed activities to their full potential. These beliefs were also likely to have isolated them from learning from other people with chronic pain.

EXPECTATION OF DISBELIEF

The participants expected others to be disbelieving of their pain, and critical of them when they were in pain or functionally limited. This was most likely due to their implicit theories, disbelief, and criticism of others suffering pain. Often they felt ignored or isolated in their pain. Here is an example of a woman explaining how she felt as a child when she grew up with pain, and her parent's reactions: *"as my pain got worse their situation got worse as well, so it seemed to me that there was never an appropriate time to say 'I'm in pain, this hurts, help me' and it, so I never did"*. As a result of these beliefs, the participants sometimes did not seek health-professional treatment when it may have been effective. They also did not ask for help from significant others, which might have been effective in assisting them to manage their chronic pain.

SUMMARY

As part of the treatment process, the participants did not simply present with an injury that required treatment. Each person presented as a dynamic, changing, interacting individual, with thoughts, feelings and preferences regarding their pain management. The participants attempted to provide explanations to themselves regarding pain. While not necessarily accurate, their beliefs had a large effect on the management process. These beliefs were presented as existing on three dimensions, related to themselves, pain and the perception of others. They are crucial to and drive the central part of this model.

By the time that the participants had developed chronic pain, they had a history of failed treatment-processes from their acute pain stage. They were also affected by prior experiences with their own and/or others' pain. As a result, their implicit theories, and how they mentally constructed pain, influenced how they responded to treatment and the health-professionals who were attempting to treat or help them manage their pain. Their implicit theories added to how they managed their pain using both their own strategies and those suggested by health-professionals. These implicit theories changed over time with the different experiences the participants had.

3.5.4 BELIEFS AND IMPLICIT THEORIES INVOLVED IN DECISION-MAKING

When the participants were in pain, they needed to make a decision regarding their pain management. Their beliefs, thoughts, attitudes and knowledge about pain and its causes influenced this decision-process. These thoughts and beliefs generally fell into three categories, with additional, overarching factors. They concerned beliefs about finding a cure for their pain, that nothing could be done to reduce pain, and the active management of pain.

The participants appeared to pass through a cycle of thoughts and beliefs about their pain. They might pass many times through this cycle, with their implicit theories developing and changing each time as they learned and understood more about their pain and its management. The first pass through the cycle was frequently in anticipation of a cure. Often they held on to this expectation for some time. They frequently returned to it during their chronic pain process. When this expectation and the management strategies involved failed, and no cure was forthcoming, they then often shifted to the belief that there was nothing that could be done to treat or manage their pain. The participants held this belief for varying amounts of time. This often resulted in their becoming depressed. Finally, there was the belief that their pain, although it was unlikely to be cured, could be managed. This was a compromise between the two extremes. The participants often oscillated between the first two of these beliefs. This influenced their decisions about pain management. They often moved towards the management beliefs and therefore management strategies as time progressed. There were other overarching factors that impacted on their beliefs throughout this process, particularly the knowledge or understanding they had of their condition, treatment, and the difficulties that arose when there was a mismatch between their beliefs and the treatment they were being offered. This process is illustrated in figure 3.7 with the participants' implicit theories oscillating between ideas of cure, doing nothing and management strategies.

3.5.4.1 Over-Arching Factors

There were a number of overarching factors that applied across the three main factors (seeking a cure, doing nothing, and managing pain). First, there was a lack of knowledge or information about their condition and its management. This was particularly true early in the management process. Second, the participants' beliefs and expectations sometimes did not match those they reported being held by the health-professionals. Additionally, most of the participants were not able to discuss the differences between their own and their health-professionals beliefs with their health-professional, which often led to non-adherence.

The lack of information about pain in general, their particular condition, and possible management strategies was described as a major problem for the appropriate treatment and management of the participants' chronic pain. Through having insufficient information, many of the participants reported proceeding to participate in activities that were detrimental to their chronic pain condition. This was clearly an interactive process, with the health-professional offering information that they considered to be important for their patient to know, and the patient requesting and processing the incoming information. For example, one participant stated: *"I think I misunderstood probably the advice I was*

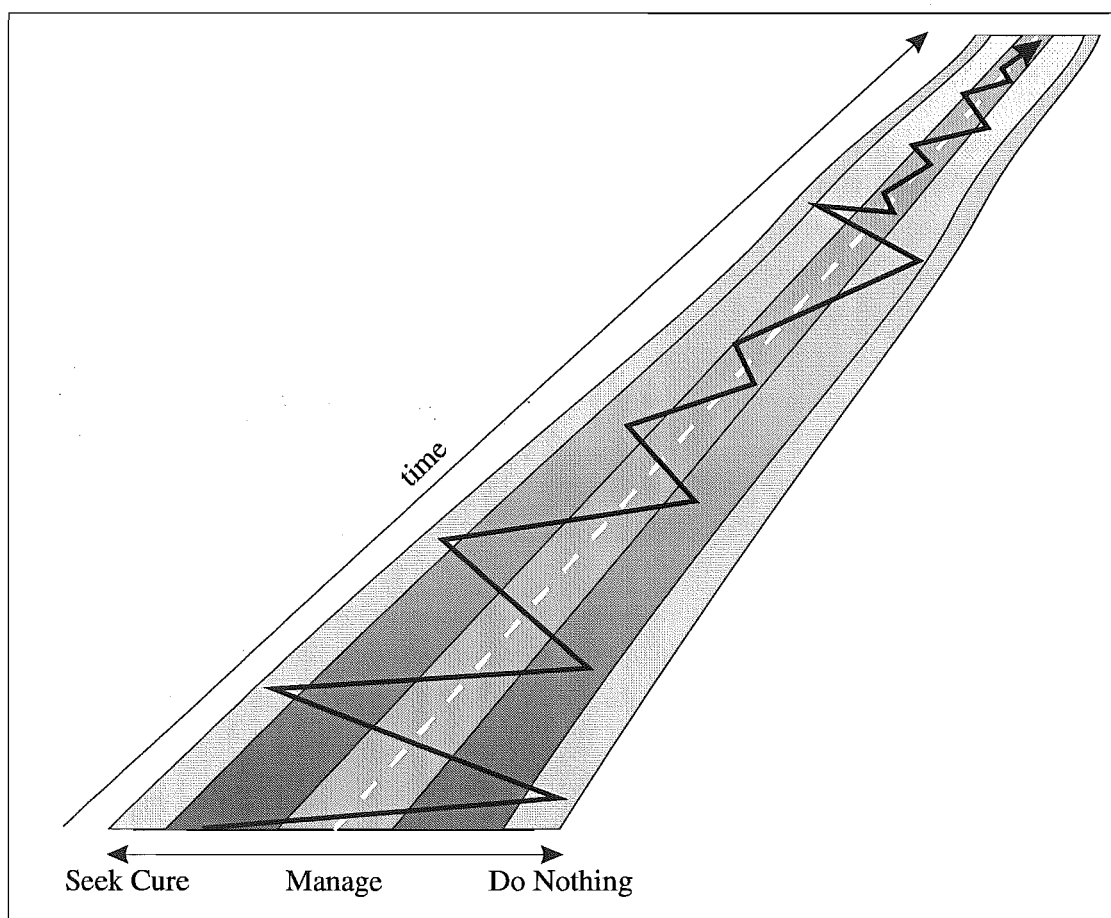


Figure 3.7: A Possible Pathway Through the Three Types of Implicit Theories used to Choose Chronic Pain Management Strategies.

This figure shows a possible pathway over time through the three different types of beliefs related to different types of strategies used to manage chronic pain. The use of these strategies is intricately linked to the participant's implicit theories.

given. Perhaps I could criticise the specialist for not giving me sufficient advice”.

Participants were often offered treatment that did not combine well with their implicit theories about which treatment was best. This often led to non-adherence to that particular treatment, rather than direct confrontation with the health-professional to negotiate an agreeable treatment. This occurred most often when medication, in particular anti-inflammatories, was prescribed. A typical example of medication beliefs included: *“I have never been particularly keen on taking medications and I don’t take anything for pain, virtually never have”*. Due to the lack of belief in the type of treatment prescribed, the participants sometimes did not follow the health-professional’s instructions and were non-compliant with treatment. This was often an active decision on the part of the participants.

3.5.4.2 Cure Beliefs

Initially in the chronic pain process, and at many later stages of the management process, the participants focused on finding a “cure” for their pain. Usually, they thought that this cure would result from a physical treatment, with them having little active involvement. That is, they expected a single-modality, physical treatment to be effective in curing their pain. As a consequence, short-term, rather than long-term strategies were considered. Even with knowledge to the contrary, many participants continued to apply these short-term “cure” strategies. Their seeking of treatment was pain-focussed rather than function-focused. They expected health-professionals to provide this “cure”.

The participant’s cognitions were often initially positive, especially when starting a new treatment. One participant reported *“looking forward”* to treatment. This was especially if they thought that it would make a positive difference to their pain. Later in the chronic pain process, the same applied if they thought the quality of their lives would improve. For example, a typical participant said: *“I was looking forward to the surgery, I was really looking forward to it”*. Positive cognitions were also reported when the participants had recently met health-professionals who were positive about being able to help them with their pain problems. This was also true if the health-professionals validated their present pain and disability. Examples provided by two participants included: *“it was very validating, and that was, yeah, that was good”* and *“he couldn’t believe that I had any function what-so-ever because the nerve was totally scrunched and restricted totally”*. This attitude led the participants to focus their decisions entirely on that particular treatment or management. As a result they often did not explore other options open to them. This frequently led to disappointment when the treatment failed to meet their expectations. The participants would then modify their choice of management strategy, sometimes positively and sometimes negatively, depending on their implicit theories and past experiences.

The participants had many expectations of health-professionals. These included what health-professionals should be like, how they should behave, and what treatment they should advise. The participants also held expectations about the effects, and effectiveness, of the treatments. These expectations were often dichotomous. They expected that the treatment would produce a total cure, or that it would make no difference at all. There appeared to be no middle ground, in the early stages, where the participants thought that treatment could reduce their pain and/or functional disability to some degree. In the early

stages of treatment, even in the chronic pain stage of the pain process, their expectation was clearly focussed on finding a cure. Such was the participants' initial belief in a physical cure they sometimes would continue with a treatment even though they did not consider that it was having any positive effect on their pain. For example, one participant stated: *"the pills ... they just have no effect on me"*. Their decision-making was affected by their expectation of a physical cure. It was influenced by their beliefs about what they thought "should" work and what health-professionals "should" be like, rather than what was specifically effective for them. This often led to them not pursuing an appropriate management strategy because it did not fit with their implicit theories.

The participants' cognitions with respect to finding the elusive cure were varied. Several options were open to the participants if health-professionals prescribed treatments that did not meet their expectations. The most common of these was not adhering to the treatment, usually without discussing this with the health-professional. This was reported to happen regularly, particularly when medication was prescribed. Interestingly, the participants still became frustrated when their pain was not "cured" even though they were not adhering to the treatment. When the participant's emphasis and expectation was focussed on a cure, they often did not acknowledge the role played by psychological factors. If they did, this was in relation to viewing them as a weakness rather than as an important, and potentially positive, aspect of their chronic pain management. The acknowledgment of helpful psychological processes was a positive factor for some participants later in the chronic pain management process. This was true when the emphasis was on management of their chronic pain rather than finding a cure.

Most participants aimed to prevent their pain from increasing, for example, *"I try and avoid ever reaching a ten [out of ten in pain-intensity]"*. The emphasis focussed on preventing immediate pain fluctuations, not in preventing the pain from increasing or fluctuating in the days, weeks, months, and years to come. Usually this involved a reduction in activities. This was sometimes problematic as the participants tried to avoid ever increasing their pain. They avoided most activities in fear of an increase in their pain. Many of the participants avoided strategies that would provide long-term relief unless they also provided short-term relief. Their emphasis focussed on acute pain strategies rather than strategies that were more likely to be effective in the longer-term. This was because these long-term strategies did not fit with their implicit theories.

Very negative cognitions were evident with respect to the participants' pain and treatment. Predominantly this occurred when the treatment, which was usually surgical, caused further damage instead of "curing" their pain. An example from one participant included: *"he damaged the right hand ... like I have got permanent injection of [anaesthetic] the nerves are broken"*. Typically this led to the participant making different treatment decisions in the future. The participants regularly externalised blame for their continuing pain, this was often directed at health-professionals. The participants felt very negatively towards the health-professionals they had consulted, particularly when they felt that their additional problems could have been prevented. Typical examples included: *"they came up with a particular drug I was to take, but what it was, was a clone drug of a drug that I was already taking so each day I was overdosing myself"*, and *"the guy, named Dr [name], apparently he smoked too much*

of the weed". The difficulties encountered sometimes led to beliefs that health-professionals could not help them. Consequently the participants began to develop different implicit theories about the "cure" of their pain. It is likely that these changed implicit theories led to more effective management of their chronic pain.

These very positive and negative cognitions about treatment led to inappropriate choices of or use of management strategies. This appeared to be due to the over or under-use of what may have been appropriate strategies at some time in their pain process, for example rest or exercise. In general, the participants did not identify that different strategies may be useful at different times. For example, the use of rest may be an effective management strategy for some acute pain conditions. However, when used exclusively in a chronic pain situation, it may lead to increasing chronic pain. This occurs because the participant has unhelpful implicit theories about the use of rest, when it is not an effective management strategy at that stage of their pain process.

The participants were, understandably, very concerned about the efficacy of the treatment they were undertaking. This was especially salient given their experience of interventions that did not reduce their pain. A typical example included: *"I couldn't do anything about it ... an intervention has been put in place and I have just take a step back, but then getting worse again has been speeded up and whenever an intervention has been put in place then going down that slippery slope has just been getting faster"*. Rather than reducing pain, many of the participants, such as the person in the example immediately above, believed that their treatment actually increased pain. Their thoughts about efficacy, whether they were accurate or not, helped to determine their management strategy choice. The same was true of the perceived side-effects of treatment. These effects also impacted on their adherence to a management strategy.

One of the most commonly reported side-effects of treatment was additional pain. This occurred either when the treatment was being performed, and/or as long-term additional pain that continued for an extended time after the treatment had ceased. Pain during and after treatment sessions was a leading cause of early termination and non-adherence to treatment, thus affecting management decisions. Unfortunately, this ensured that the participant did not benefit maximally from the treatment being offered. The participants' beliefs about pain being a signal of increasing physical damage affected their decisions about treatment options, often leading to the termination of a treatment that may have been of long-term benefit. An example of this included: *"[physiotherapy] in itself is quite painful, so I don't know if I want that done again anyway, unless I absolutely had to"*.

A common side-effect, especially of surgery, was the presence of scar tissue and deformity. This was particularly distressing to the participants who were concerned about negative evaluation and wanted to fit into society. An illustration of this included: *"I do scar very badly, and he certainly could see that, that there was an enormous amount of scar tissue ... he said obviously that it [surgery] would generate some scar tissue"*. Excessive scarring also caused additional pain. Further, with surgery there is always the possibility that something will go wrong and cause further damage, or might not decrease, but might in fact increase, pain-intensity and functional disability, even without any obvious difficulty during the process itself. The following quote from a participant provides an

example of this: *“all these operations and all these things that they did with the [surgical procedure] basically screwed my arm up it won’t straighten ... it straightened before, most of the way ... the whole arm is out of shape”*. Beliefs regarding the cause of additional damage affected the participants’ future decisions to engage in this or similar types of treatment. The participants often did not think of the long-term consequences. Typically participants underwent several surgical procedures before identifying that surgery was causing them additional pain and dysfunction and modified their decision-making process.

Some participants were prescribed narcotic painkillers. Unfortunately, addiction is a common side-effects of these medications, further, tolerance can be developed. Consequently, an increased dose was required to provide effective pain relief. An example of this included: *“I’m sort of based on codeine-based drugs. They have worked, but I have a, I suppose quite a heavy drug problem at the moment, I’m taking too much for the pain, but its not working any more. I have quite an addiction to the morphine/codeine based drugs”*. The implicit theories held by the participants about the cause of their pain, and therefore the appropriate physical treatment, increased the likelihood of their engaging in these management strategies, even with the likelihood and actuality of the strategies causing additional difficulties.

Medications of different types have different side-effects. Anti-inflammatories are well known to cause gastrointestinal problems in some people. For example, one participant stated: *“I had an upset stomach with bleeding from the bowel”*. As a result of beliefs about medication, many participants refused to take medication, on principle, regardless of whether they had trialed it or identified its merits and risks. A typical example included: *“I think that they are bad for your stomach ... and I don’t like taking them”*. Some medications placed restrictions on activities in which the participants could partake. These included limitations on food or alcohol intake. Quotes illustrating this included: *“the alcohol with the medication sends you off your rocker a bit”* and *“the pills, of course, all tell you not to [drive]”*. Additional complications with medication are allergies or prescription error. Both of these situations were described by some participants. Illustrations of this included: *“I was given amitriptyline even though I have already tried it earlier on in my life and found that I was allergic to it”* and *“I was overdosing myself, I was fainting and collapsing”*. Interestingly, most of the participants did not actively modify their implicit theories to account for their difficulties with medication. Instead, they tended to rely on general implicit theories which appeared to have either an all-encompassing rule not to take medication, or alternatively, they took any medication regardless of their condition because of their theories about the physicality of pain.

Resistance to some medical treatments, especially involving medication, was commonly reported. Most of the participants did not discuss their preference not to take medication with their health providers. Consequently, alternative treatments were not explored. The participants often did not adhere to their medication and consequently gained little or no benefit from it. Usually, this was an active decision by the participant. However, some participants reported “forgetting” to take their medication. An example, of this provided by one participant included: *“I have to do all of my own medications now, which has been a bit of a disaster, I keep forgetting”*.

Side-effects were commonly reported for various treatment strategies. Examples of this included: *"I keep forgetting ... I lost my speech, lost my memory"*. Assessment and treatment were very stressful experiences for some participants. For example, one participant said about an assessment: *"it was the most harrowing experience that I have had in a very long time"*. These factors affected the participant's chosen pain management strategies.

Most of the participants acknowledged the role that psychological factors played in the modification of chronic pain. However, they generally thought of this as a weakness, rather than viewing it as a strength. If their pain could be lessened by emotional or motivational factors, it was seen by many as indicative of failure and that there was not something physically wrong with them. This followed from their implicit theories about pain. They commonly believed that pain due to a physical disorder was legitimate, but psychological influences were seen as a sign of personal weakness. This distinction between mental and physical disorders greatly affected their chosen management strategies. Participants whose implicit theories were focussed on finding a physical "cure" chose only single-modality treatments and only those that suited their current theories. These implicit theories eliminated the possibility of multidimensional pain management.

It is interesting to note that the participants who reported functioning better in everyday life reported using more long-term pain management strategies and fewer short-term "cure" strategies. The strategies chosen by the participants appeared to be directly related to their implicit theories about the causes and treatments of chronic pain. This may have been due to lack of knowledge or understanding for some participants. However, they often knew, or had been told, which strategies would be more effective, but they were not motivated to use long-term strategies. One participant said: *"other things, like supposedly stretches and exercises that I am supposed to do, but I can't get motivated, I don't like it, it hurts to do the exercises ... I see the benefits, but I just don't like doing something that is inflicting pain on myself. The benefits are longer-term and the pain is immediate, so I come up with I can't be bothered, I should do it, I know I should do it"*.

3.5.4.3 Do Nothing or Ignore Beliefs

When the participants had focused, without success, on finding a "cure" to end their pain, they often did nothing. They believed that their pain could not be affected in any way, and consequently they decided not to actively to manage it. For some participants, this also meant that they did nothing in their life, consequently their functioning decreased markedly and their disability increased. For others, these beliefs led them to ignore their pain and become very function-focused to the detriment of their painful condition. This often led to large increases in pain, which in turn led the participants to decrease their activities. The beliefs held by the participants included those concerning the authenticity of their pain, general philosophies about pain and its function, negative beliefs about health-professionals and/or treatment, specific beliefs about the treatability of their condition and specific types of treatment, and the perceived consequences of pain on their lives. At any one time, there were several possible reasons why participants would choose to "do nothing" to manage their pain. Firstly, the participants "did nothing" because that was an active decision that they reached based on

their understanding of their pain, its causes, and its treatments. Secondly, there was general dissatisfaction with treatment received from health-professionals. Thirdly, the participants were operating under a schema of helplessness.

Most of the participants questioned the authenticity of their pain. They asked whether it was “all in their head”, or whether they were in fact “making it all up”. This was especially common when health-professionals told them this. They sometimes then tested their pain out to see if it really did hurt or whether in fact they were making it up. An example of this included: “*[a physiotherapist] said that there was nothing else they could do, one said it was all in my head. I thought ... well, it might be, but it is still sore*”. When participants questioned the authenticity of their pain, they often opted to not manage their pain and instead they continued as if their pain did not exist. This usually resulted in additional pain and disability.

The participants commonly denied the effect that their pain was having on their lives. Beliefs about this affected their choice of management strategy. Denial of the need to manage pain did not lead to the use of effective management strategies. Related to the participants denial, which is at one extreme, is their catastrophising, which is at the other end of this dichotomous continuum. For example, one participant stated: “*[I] thought my whole life had collapsed*”. Often, the participants who were denying the effects of their pain were the same ones that were catastrophising in other areas. For example, the following participant, when asked about using rest when in pain, illustrated dichotomous thinking by reporting a belief that resting occasionally was equivalent to spending half of her life in bed. She said: “*if I said that I’m in pain and I’m just going to go to bed then I would spend half my life in bed, I think that that is a waste*”. Again, this thinking did not lead to use of adaptive management strategies.

Some strategies chosen by the participants focussed on immediate functionality, rather than maintaining a balance between function and pain. Focusing entirely on immediate functioning and ignoring the impact of pain increased the likelihood for a longer-term reduction in functioning. Thus, these participants were not actively managing their pain. This was often related to what they regarded as the important area of work. The participants reported that if they had met one particular condition their pain would be controlled or eliminated. However, in practice, this was not the case. For example, one participant stated: “*I thought that it would be all right as long as I get a writer for my exam and am careful ... it just got worse*”.

Motivation to continue, despite pain, was common. “*I’m going to beat this*” and I’m going to “*keep going regardless*” were common thoughts, even among those participants who spoke about having “*given up*”. The participants sometimes saw pain not as a part of themselves, but as something that needed to be fought and beaten. This was positive in many ways, in that it provided motivation for the pain-sufferer to continue to function despite being in pain. This sometimes led to effective management decisions. No viewing pain as part of themselves also had a negative aspect for the participants, when it created resistance to them accepting their limitations and living within their pain boundaries. Thus it could also lead to ineffective management decisions. When thinking in this way, participants often engaged in activities that were beyond their capacity to complete without

unnecessary aggravation of their painful condition. This would then be followed by a period of time when their activities were greatly restricted and their pain greatly increased. It follows that these implicit theories, in regard to motivation and denial, could lead to ineffective management decisions. As an example, one participant said: *"I would grit my teeth and carry on regardless and I wouldn't let this pain beat me ... I am not afraid of hurting my self, because it does not make a damn bit of difference anyway, so I am just going to go for it. Um, and I would, and the worse the pain the harder I would go doing whatever I was doing. And, um, I denied it a lot, I would say 'I am tough I can cope with that'"*.

At times participants thought that pain should be endured. As an acute pain-behaviour, this was detrimental for the participants, as it usually meant that they did not get the professional help and treatment which may have reduced subsequent chronic pain and disability. In contrast, as a chronic pain strategy, enduring the pain and continuing to function in the activities of everyday life was often adaptive. The outcome depended on the extreme to which this was taken. An example of this provided by one participant included: *"I have to deal with [it] on my own and shut it down, case closed, more or less"*.

Participants sometimes reported that they did not need health-professional treatment. Others were told, by health-professionals, that their pain would reduce just as quickly without professional treatment. For example, one participant stated: *"the doctor told me that it would probably go away just as quickly on its own"*. This attitude was occasionally received positively by participants, who felt in control when left to manage their own pain. However, this was not usually the case, with participants left feeling distraught and abandoned through not being offered treatment for a problem that was disrupting their lives. If the person was operating under a "cure" belief, this usually resulted in them consulting a different health-professional. Alternatively, the person "gave up" on ever being able to affect their pain. An example of this included: *"I just didn't do anything about it"*.

Participants who had tried numerous different treatments with various different health-professionals often passed through a stage of believing that treatment either could not, or would not work. For example, participants stated: *"I thought that there just wasn't anything that could be done"* and *"they can't do anything about it"*. Consequently, they did not seek further treatment. Illustrations of this included: *"[I] didn't seek treatment"* and *"it [treatment] does not make a damn bit of difference anyway"*. Generally, the participants felt that there was nothing they could do about their pain and, therefore, they simply had to live with it. For example, a typical statement was: *"it is just something that I have to live with"*. Many believed that intervention increased their pain rather than reducing it. For example, a participant stated: *"an intervention has been put in place and I have just taken a step back"*. In these cases the participants did not seek further treatment because they thought it would provide no benefit.

3.5.4.4 Manage Beliefs

As a result of having passed through the previous two pain management strategy beliefs the participants often believed that they could manage their pain. Further, they believed they could maintain

or increase their functioning. In part, this involved balancing the factors that increased their pain and those that decreased their pain, while still functioning to some extent. They also needed to balance their short-term pain reduction and long-term functioning.

At times the participants failed to regulate their pain and functioning adaptively. Often, this was because they swung from doing too little to doing too much, with beliefs moving from an extreme focusing on pain to one focusing on function. As a result of health-professionals' advice, or because of their own experience, some considered managing their pain rather than seeking a cure. They sought health-professionals who could assist them in this changed goal. Multidimensional treatment and emotional factors became more salient to them; these were seen more positively, rather than as a weakness. It was important for the participants to develop realistic expectations of the management of their chronic pain. The participants operating under these management beliefs, requested and sought treatment that was multidimensional or holistic rather than of a single (usually physical) modality.

Adaptive management of pain and functioning required a balance between factors that increased, and those that decreased, their pain. Often the factors that increased pain were activities that were necessary for quality of life, or everyday functioning. All of the participants reported activities that would increase their pain. These were usually activities associated with daily living, or activities that the participant particularly wanted to be involved in such as work, sports, or hobbies. Mostly, the participants actively tried to avoid factors that increased their pain. However, later in the pain process, those who were functioning well learned to manage their pain situation so they could still perform desired activities, while not increasing their pain unbearably or decreasing functioning in the long-term. A small number of participants did report actively increasing their pain to gain advantage, but this was uncommon. The participants used many strategies to reduce their pain. These were used at different times by the participants producing different functional outcomes. Some of these strategies reduced pain immediately. Other strategies reduced pain in the longer-term, but sometimes even increased pain in the short-term. Other strategies appeared to have a preventative role, such as exercise. Implicit theories about the role of functioning as opposed to pain reduction were particularly important in managing chronic pain. There needed to be an active and flexible balance between these two concepts for effective pain management and manageable disability.

For each of the participants, there was a time where they failed to regulate their pain, resulting in a disruption of their functioning. Typically this was because they chose an inappropriate strategy or combination of strategies. A common maladaptive strategy involved the participant spending much time resting and doing very little activity, then partaking in a large number of activities in a short space of time, essentially over-doing activities. With patience they may have been able to achieve the same outcome, in terms of activities completed, in a longer amount of time, without a large increase in pain. Often the participants participation in inappropriate activities was because they became frustrated at not being able to do what they wanted to do. An example provided by one participant included: *"I push myself too hard that's all. I finished up in hospital quite regularly by over doing things. Trying to prove that I could"*. Their beliefs often included rigid expectations regarding being able to do things that they could do prior to pain-onset, without modification. This led to a large increase in their pain.

Alternatively they held beliefs that because of their pain they should do nothing, this caused additional pain and led to decreased functioning.

Occasionally, especially in the later stages of chronic pain, the participants and/or health-professionals developed more realistic expectations of intervention. One example provided by a participant included: *"he [surgeon] made me no guarantees that it [pain] wouldn't just come back"*. Later in this process, the participants' expectations changed with regard to what they were pursuing in an intervention. This appeared to follow a change in their beliefs. For some participants, the focus shifted from expecting health-professional to produce a cure, to their managing their pain themselves, and reducing their functional disability. For example, one participant reported asking a health-professional: *"can you refer me to someone to rehabilitate me"*. When focusing on rehabilitation the participants did not expect a quick cure. Instead, they spent time developing skills that would last them a lifetime. One participant said: *"I really do look forward to developing skills"*. Multidimensional treatment was seen positively in the latter stages of the chronic pain process. This stage usually occurred after many single modality treatments, particularly physical treatments, had failed to produce favourable results. It involved the use of very different beliefs to those used when people were expecting a cure. The following participant was very positive about multidimensional treatment. She said: *"I am very excited about it, kind of, yeah, I think it is very encouraging ... looking forward to the future in a positive hopeful sort of light I find that really exciting"*.

The participants acknowledged, later in their chronic pain process, that emotional support was very important, both from their families and from health-professionals. For example, one participant said the following about talking with her mother: *"good actually, I don't know if I would have been able to do it before, but it was good, I have got to a point now that I can, so that was good"*. Another participant talking about obtaining support from health-professionals said: *"I am not doing it on my own"*. The participants were recognising the value of support from others. These were very different beliefs from those usually described at the beginning of their chronic pain process, when the focus was on being independent and not requiring any help or support.

At a later stage in the chronic pain process, the participants learned to "live with their pain", or to "accommodate their pain". They no longer used acute pain management strategies or expected to be provided with a cure. The participants reported that it took many years to reach this stage. Some of the participants interviewed had not yet reached this stage. It required changes to be made to the participant's life that had a long-term focus of functioning despite their pain. This strategy was very different, and required very different beliefs from the strategies employed while working with the short-term goal of resolving the pain. The functioning-related and long-term beliefs and strategies involved a more holistic outlook, encompassing many areas of the participant's life. During this phase of their pain management, the participants sometimes still sought health-professional advice. This advice was holistic, focusing on themselves as a whole, rather than individual body parts. It also addressed emotional aspects of pain. After many years of chronic pain, any reduction in the pain, even if it did not totally eliminate the participants pain, was perceived as positive. Examples of this included: *"I didn't care it was close enough"* and *"I had like, three months off [with very little*

pain] so to speak and I thought 'God, even if I have a few years like this, this is wonderful!!'". With their beliefs not focussing on cure, the participants were better able to balance their pain-intensity and functioning, leading to more effective management.

"Psychological" strategies were also employed by the participants, in addition to "physical" ones, in an attempt to manage their pain. These were usually used in the very early acute stage, or in the latter stages of chronic pain when other strategies had failed to produce effective management. Many of the participants held strong beliefs about the role of psychological factors in chronic pain. These affected their choice of management strategy. Most acknowledged the role psychological factors played in the modification of chronic pain. However, this was usually viewed as a weakness, rather than as a strength. Consequently, psychological strategies were often not effectively used. If pain could be lessened by emotional or motivational factors, this was misinterpreted by many of the participants as indicating that they were a failure and that they did not something physically wrong with them. Usually, the realisation of the positive aspects of psychological factors emerged later in the process. This often occurred after a period of major depression. Even so, some still found it hard to acknowledge the role of psychological factors. The following participant talked around the area, before finally admitting to psychological influences: *"well yeah, now, there again, I sometimes, I suppose I, sort of believe in the power of the old brain"*.

3.5.5 IMPLICIT THEORIES RELATING TO HEALTH-PROFESSIONALS

The participants held many implicit theories about health-professionals and their role in the chronic pain process. Again, these theories can be divided into three broad categories. Firstly, the participants believed that health-professionals were the authority on chronic pain. They expected that health-professionals would provide a cure. This was especially true in the early stages of the chronic pain process. With time, the participants often swung to the opposite extreme, which is the second category. They believed that health-professionals could not affect their pain or lives at all. Finally, they moved to a more holistic view, that health-professionals could help them manage their pain and disability. Their beliefs about health-professionals usually moved in tandem with their beliefs about treatment.

The participants reported difficulty communicating with their health-professionals about their ideas and beliefs about treatment. As a consequence, they often did not receive treatment that met with their expectations. As a result, they did not adhere to the prescribed treatment. Treatment options often did not fit well with the participants' ideas of which treatment would be good for them. This led to non-adherence with that particular treatment. The participants did not directly confront the health-professional to discuss the options and find an agreeable management strategy.

3.5.5.1 Health-Professional's Cure

A common belief, especially early in the treatment process, was that the participant's pain would be cured by a health-professional. The participants actively sought a cure and believed that a cure was possible. This belief was often reinforced by the messages the participants received, or at least

interpreted, from health-professionals. They believed that each health-professional they consulted would provide that cure for them. They became dissatisfied if the health-professional showed any signs of not being able to provide this cure. Coupled with this expectation that health-professionals know everything and would provide an immediate cure, was the belief that health-professionals would not make mistakes or have any gaps in their knowledge. While these beliefs were common early in their chronic pain process, participants regularly returned to them over time.

Initially when presenting for treatment, the participants' expectations and hopes were focussed on curing rather than managing their pain. This was especially true when considering surgery. Usually before surgery the participants were very positive and looking forward to being cured of their pain. For example, one participant said: *"I was looking forward to the surgery"*. Surgeons were often reported to be positive about the outcome of surgery, inflating the participant's positive expectations. For example, one participant reported: *"[the surgeon] said, 'well, I think we could do some more surgery and fix this'"*. Surgery was not the only treatment for which the participants had very positive expectations; physiotherapists were also expected to provide a cure or a "quick fix". A illustration of this included: *"each person [physiotherapist] has got a slightly different philosophy, but heat treatment, ultrasound, and, um, things like just massage, and, um, various exercises to supposedly fix it"*.

The participants were unforgiving if they thought health-professionals were even slightly wrong in their diagnosis, prognosis, or other decisions. They expected health-professionals to meet their own perfectionistic rules. For example, one participant stated: *"I can still remember hearing the guy say, 'it will only take a couple of days', I was in there for a month or something. Which is very hard to get out of your mind"*. Their perfectionistic and dichotomous expectations in this case were of an immediate cure.

The participants had many expectations about the treatment and cure for their pain. Unfortunately, the participants' expectations often did not match reality. Most common was the fact that they expected, and felt that they were led to believe, that their pain would be cured in a short period of time. This obviously was not the case. Additionally, the participants felt frustrated, especially when their health-professional did not prescribe the treatment they felt would benefit them most. However, they typically did not communicate these beliefs to their health-professional.

3.5.5.2 Health-Professionals Cannot Help

Frustration felt towards health-professionals was common amongst the participants. This was especially true after they had spent considerable time pursuing treatment that did not cure their pain. One participant said: *"I got a bit frustrated in that my physio seemed to learn as he went along as well"*. When health-professionals told them that they could not help them, or that treatment was not necessary or advisable, the participants usually changed their beliefs regarding health-professionals. This change was usually to the other end the continuum. Instead of believing that the health-professionals knew everything and were able to do everything, the participants believed that health-professionals were unable to help at all.

Some participants reported being told that the health-professional could not help their pain. For example, one participant stated: *"they said that there was nothing else they could do"*. Another source of frustration occurred when participants were told that they were making it up or that it was all in their head. A quote from one participant included: *"one [physiotherapist] said it was all in my head"*, another said: *"frustrated would be a good word I just I am just frustrated"*.

3.5.5.3 Health-Professional Management

In the earlier stages of the chronic pain process the participants expected a quick cure for their pain. As time progressed, and there was no cure to their pain, the participants started to look for skills to manage their pain rather than a specific treatment that would provide a cure. This more holistic approach involved their learning skills to live functionally with their pain, rather than seeking pain elimination. This approach was seen positively in the latter stages of the chronic pain process, but very negatively in the earlier stages. Holistic strategies, such as developing life-skills, were aimed to assist the participants' management of their lives with chronic pain, rather than curing the chronic pain itself. For example, one participant said: *"whereas now as it [the pain] comes back, knowing what I know, I can put in strategies before the pain becomes all consuming and I am no longer capable of seeing anything else"*. Participants usually found that after implementing these skills, their pain became, if not dramatically lessened, at least of secondary importance, even though the focus of the management was not the reduction of pain.

3.5.6 TREATMENT PROGRESSION

Following pain experience, with time, the participants sought treatment for their pain. Treatment was reported to progress with health-professionals telling the participants that they would be able to cure their pain if they complied with a particular treatment. When this "cure" did not occur, the health-professional often referred the participant to another health-professional. Again, it was anticipated that the referral would result in a cure for the participants' pain. One participant illustrated this by saying: *"my GP, he thought that it [physiotherapy] would completely and utterly fix it, like when I went back to see him in August he was amazed that it hadn't completely healed ... they said we had better do something about this and gave me a cortisone injection. And that was supposed to completely fix it"*.

When looking for and expecting a cure for their pain, the participants found it very difficult to be told that there was no immediate cure for their pain, and probably no cure at all. An illustration of this included: *"what everyone tells me now is that it [pain] is not going to go. You know, and that is not a real cool thing to be happening"*. There were four outcomes for a participant faced with no immediate, easy cure. First, they could lose faith in their health-professional and think that they cannot provide a cure. Second, they could be referred to another health-professional. Third, they could be told that their pain is not real. The participants could interpret all three of these cases negatively, believing that there is nothing that could help them. Fourth, they could continue with the ineffective treatment.

As time passed, some participants learned to manage their pain rather than believe that either someone

would provide a cure, or that there was nothing that could be done to influence their pain. The participants often oscillated between these three beliefs, and their associated management styles, this has been discussed above in sections 3.5.4 and 3.5.5. Effective management of chronic pain resulted from a balance in focus between managing pain-intensity and managing functional disability in both the short and long-term.

3.5.6.1 Management Strategies Varied Over Time

Many of the participants described chronic pain as being very different from acute pain. It is likely then, that treatment or management should also be very different, both conceptually and practically, for these two different stages of pain. For example, one participant said: *“if you break your arm or you cut yourself, within six weeks it is going to heal, but in my situation I don’t know if I am doing good, bad or otherwise. The unknowing, I don’t know if I will work again, I don’t know if the pain will get better, you know, no one knows”*. Despite the participants sometimes making a clear distinction between acute and chronic pain, it appeared that many were still functionally using acute pain beliefs, implicit theories, and treatment methods rather than chronic pain management methods. For example, one participant was still using immobilisation and ice application as a pain management strategy years after the onset of his pain. This was despite suggestions from health-professionals that a better option would be the use of strengthening exercises. As the participants progressed through the chronic pain process, their use of treatment and management strategies differed. Each participant generally shifted towards management, rather than expecting a cure or doing nothing.

3.5.6.2 Consults Many Health-Professionals

Most of the participants consulted with many health-professionals. This was probably because of the intractable nature of their pain problem and the vulnerability variables that were present. These may have been health-professionals from the same profession (e.g., many physiotherapists) or from differing professions (e.g., podiatrists and general practitioners). For example, illustrations included: *“then I went to a hand specialist who said that it wasn’t in their area so I went to see [musculoskeletal specialist] who gave me cortisone injections . . . he sent me to a rheumatologist because I have got arthritis in my fingers but they couldn’t help”* and *“Gee how many doctors and physios . . . I was sent off, by my doctor to another specialist, a podiatrist, who um, and physio as well on top of that . . . I went to several different people with the hope that they would be able to do something different”*. Participants who consulted with many health-professionals rarely benefited from any single treatment because they moved to the next health-professional too quickly. This also meant that they were unable to develop a trusting relationship where they were able to communicate their needs and beliefs. Seeking treatment from more than one health-professional, perhaps in order to receive multidimensional treatment, could be advantageous for participants at times. However, moving rapidly between health-professionals, without the participant and the health-professional effectively communicating with each other, and without the participant adhering to treatment, was not effective in terms of a positive and functional outcome.

3.5.6.3 Process of Treatment Progression

To function well a person needs to reach a fine balance of avoiding some activities and factors that produce the most severe pain, while still functioning at some adaptive level. A distinction needs to be made between activities and processes that increase pain in the long-term, and those that increase pain in the short-term. Some activities, such as exercise and stretching, may increase pain in the short-term, but if continued, using a sensible programme, might decrease pain in the long-term. All participants, especially at the beginning of their chronic pain process, focused almost entirely on short-term pain management. As time progressed, some began to search beyond their immediate pain needs. Accounting for long-term pain generally led to better functioning.

When they were functioning well, the participants used more active strategies, such as exercise, positive-thinking, and distraction. This is opposed to more passive strategies, such as rest, or heat application. Those who were functioning well used passive strategies only in moderation. They also tended to limit the amount of time that they were using pain reduction strategies in comparison to activities of everyday living. Further, they appeared to have a greater understanding of what specifically increased their pain. They sometimes completely avoided particular activities. However, most activities were undertaken in moderation. In essence, they had learned to understand and manage their pain, rather than have their lives controlled by it.

Most participants seemed to have difficulty balancing the need to keep their pain-levels at a minimum, with the need to function effectively. Most had discovered, by experience, that if they literally did nothing, then their pain was greatly reduced. However, this was not a functional outcome, either physically or psychologically, as indicated by the difficulties (such as, depression) they encountered when following this option. The participants found it very difficult to effectively moderate their activity level. This was, probably a function of their vulnerability factors and their personality structure relating to situational demands. Their activity tended to fluctuate between doing too little, and doing too much. Thus, they experienced wildly fluctuating pain-levels, which appeared to them to be entirely related to the activities they undertook.

3.5.7 CONSTRAINTS

There were many different barriers to treatment for the different participants. These may have been particular to the participants themselves, or due to an interaction between the participants and their environment or other people. Different constraints were evident with different participants. Examples of financial constraints included: *"I can't afford to find out"* and *"at the moment I'm too poor to go and have physio or whatever"*. For most participants much of their health-care was paid for by the Accident Compensation Cooperation (ACC). However, many were required to pay a part-charge on top of the ACC contribution. For example, one participant stated: *"I was having physio at this time, which was mainly under ACC, but I think I had quite a bit of insurance which paid for some of it and the ACC paid for some of it"*. Having to contribute financially towards their treatment made the participants even keener for an immediate cure rather than a long slow progression towards reduced pain and increased functionality. Age was a constraint encountered by another participant, they said:

"[the surgeon] said that he couldn't do anything until I was 15 years old".

3.5.8 IMPACT OF SIGNIFICANT OTHERS

In many ways, the role of significant others in the management of the participants' chronic pain was intricately interrelated with their own management strategies. Often, significant others would perform chores and activities for the participants. Significant others completed many activities for the participants in order to help them manage their pain. Often these activities were chores. Examples provided by the participants included: *"he would get the meal"* and *"[partner] has taken over cleaning the shower and the bath and the toilet and ..."*.

Significant others helped apply pain reduction strategies. Many friends and family of the participants would assist with, or encourage, pain reduction strategies. These might be suggesting medication, application of heat or cold, encouraging participation in exercise, or rubbing and massaging. For example, a typical participant reported: *"he [partner] will say 'stop what you are doing and have a break for a while, lie down for a while'"*. Significant others sometimes inadvertently reinforced pain-behaviours. This perhaps ensured the maintenance of these behaviours, and hence chronic pain and disability.

Significant others provided support, although this was regularly reported not to be of a type that the participant wanted. The participants often described their partner as being very supportive. This support was usually related to their pain or pain-behaviours. For example, illustrations provided by participants included: *"[partner] drew up a monthly exercise program ... I found that very encouraging"* and *"I found him quite supportive and patient"*. Significant others often encouraged pain-behaviours or provided attention when the participant displayed them, reinforcing the participants for displaying these pain-behaviours. For example, one participant stated: *"[partner] is really good, if I do anything on the computer, like if I play a game or I am typing or what ever. He kind of comes along and makes me take breaks ... and he massages me"*.

3.5.9 IMPACT OF HEALTH-PROFESSIONALS

Participants reported difficulties with the types of treatment that were offered, and a lack of information about their role in managing their chronic pain. They were intolerant of health-professionals who appeared to be not entirely proficient. They generally reported that they did not respect health-professionals. However, some participants enjoyed the feeling of nurturance they received from some health-professionals.

Wide ranges of treatment strategies were used by participants throughout the treatment and management of their pain. Obviously, not all treatment strategies were used by all participants. The common ones used, or offered by health-professionals for use by the majority of participants, were medication, surgery, physiotherapy, and multidisciplinary treatment.

A major influence on whether the participants followed appropriate treatment regimes, was the amount of information that they received, or more specifically, the amount of information that they under-

stood. Often, when there was treatment or management non-adherence, this was because the participants did not understand the behaviour that was necessary to facilitate recovery. Therefore, the participants did not behave optimally for their condition, which led to additional injury and pain. This in turn led to continuing and additional chronic pain. An illustration of this included: *"I think I misunderstood probably the advice I was given. Perhaps I could criticise the specialist for not giving me sufficient advice ... I think with the quick progress of the bandages being removed and the stitches being removed, the use of my hands should be similarly quite quick and, um, I guess I didn't understand"*.

The participants reported being unable to accommodate the health-professionals they saw as not being entirely proficient. They were not prepared to let the health-professional learn as they conducted treatment. The health-professionals were expected to know what was best for the participant at all times. For example, one participant reported: *"I got a bit frustrated in that my physio seemed to learn as he went along"*. In some cases it may have been a lack of knowledge, or the fact that health-professionals were using new techniques, that caused further damage and continuing chronic pain and disability. For example, one participant stated: *"this particular surgeon was using a new bit of equipment that he had got made in America, I think I was the guinea pig, and instead of turning left he turned right [during surgery]"*.

One reason given by the participants for not following the suggested treatment programme was that they, or their significant others, had little respect for the health-professionals. For example, two participants stated: *"[sarcastically] I have faith in doctors, that is the last thing I want to do"* and *"my mother had so little respect for him ... I think it was a disincentive to go back to him"*. This was perhaps not surprising given the experiences reported by the participants with some health-professionals. Most of participants listed clear reasons or incidents that illustrated why they did not respect or like a particular health-professional. These may or may not have been accurate. These appeared to result from the participants treating health-professionals with a "God-like" reverence. This perception was rapidly *"shattered"* when their pain continued, despite assurances by health-professionals that it would be cured. Respect was also reduced by health-professionals speaking and acting in ways that were contradictory to the participants' beliefs. For example, one participant reported: *"one [physio-therapist] said it was all in my head"*. This lack of respect for particular health-professionals was a reason why the participants often consulted with many health-professionals. At times, this lack of respect for the health profession appeared warranted. A number of these problems may have been able to be prevented if the participants had communicated effectively and provided the health-professionals with the information they required.

The participants' respect for the health-professionals decreased when they considered the health-professionals were making mistakes. For example, a health-professional prescribed for one participant what was reported to be incorrect medication. The participant said: *"it was there that they picked up that the drugs were responsible, it was just apologies"*.

The participants reported enjoying feeling that some health-professionals were nurturing and positive towards them, and validating of their pain. One illustration included: *"it is such a validation, the fact*

that they are saying 'oh yes we think that there is so much that you can get from this [multidimensional treatment] and we want you to get it as soon as possible'". When this happened the participants were usually more compliant with treatment strategies. This often occurred when the participants' implicit theories were consistent with what they thought the health-professionals were suggesting.

3.5.10 CHOOSING A STRATEGY

The participants' decision-making was strongly influenced by their implicit theories. Their choice was also influenced by the constraints on them, the influences of health-professionals and significant others, and their position in their treatment process. The strategies chosen can be seen to fall along a continuum of long-term adaptiveness. These have been grouped under three categories of regulation: under-regulation, mis-regulation, and appropriate-regulation.

The choice and implementation of a strategy results in an outcome. For a person still experiencing pain this feeds back into the top of chronic pain management process illustrated in figure 3.5. The new path will be affected by the consequences and adjustment made in the process recently completed.

3.5.10.1 Under-Regulation Styles

The category of under-regulation styles tended to focus on short-term function, rather than a balance between maintaining and/or increasing functioning and managing pain. This was either because the participants choose to ignore their pain and not actively manage it, or they focused entirely on functioning. As a result, pain is often rapidly increased and functioning decreased in order to manage the increased pain. Although there is often a focus on increasing functioning, the opposite usually happens with a decrease in functioning and an increase in pain and disability. These strategies are divided into two styles. The first style is that of no management needed. This occurred because the participants were operating under the belief that there was no problem, and that they therefore did not need to apply an active strategy. The second style focused on function. The participants using this style focused primarily on functioning in the short-term, effectively avoiding the impact of their pain and any long-term focus.

NO MANAGEMENT NEEDED

Participants using this style of management strategies often denied their pain, or at least the effects of their pain. They continued activities as if their pain did not exist. They were focussed on functionality and continuing activities, rather than reducing their pain, in either the short or longer-term.

When not actively managing their pain, participants avoided or denied its existence. They would not think about it, or would ignore its impact on their lives. Examples of this included: *"I denied it a lot"* and *"I had been trying to shut this out and trying to forget about it"*. To some extent this was adaptive. When used in moderation the person tended to function at a higher level than those focusing solely on their pain, at least in the short-term. This often resulted in a cyclical process where an extreme focus on functioning led to increasing pain. The participant may have been attempting to pursue activities, or a level of activity, that was not sensible at that stage in their chronic pain process. In turn this led

to reducing activities and functioning, which then reduced the pain. If the person then increased their functioning a large amount, they again increased their pain, thus completing a vicious cycle.

The participants also denied the effects the pain was having on their lives. They were often unrealistic about the future effects of their pain. For example, one participant said: “[I] expect myself to keep going”, another said: “I just don’t accept that I have this ... I refuse to accept this. I’m hoping ... I can’t believe that and accept what is wrong”. Some participants reported thinking that as long as they did one particular thing, then everything would work out well, and their pain would reduce or at least not increase. This was usually unrealistic. For example, one participant stated: “I thought that it would be all right as long as I get a writer for my exam”.

The strategies used with the “no management needed” style can be negative during the acute pain phase, causing additional pain and injury. However, during chronic pain this can be an adaptive strategy, causing little additional injury. The outcome depends on the extent to which it is applied. A careful balance needs to be met, which unfortunately, most participants did not manage. For example, participants reported: “I would grit my teeth and carry on regardless”, and “this is the way I do it, this is the way I work, the more it hurts the more I go”.

The participants were clear that stress increased pain and that it decreased their ability to function and cope with their pain. One participant speaking of stress said: “I don’t think that it helps it very much ... I’m sure that that would contribute [to pain]”. Another said of their pain: “if I am stressed it goes berserk”. Unfortunately, most of the participants did not effectively manage stress or put emphasis on managing their stress levels. This was especially true in the early stages of their chronic pain process. Further, the participants found it very difficult to manage more than one stressor at any one time. For example, one participant stated: “it [pain increase] usually happens when a whole lot of issues come together”. The participants usually under-regulated their stress and emotional levels, which led to increased pain.

Muscle tension caused by physical or emotional stress contributed to increased pain. One participant said: “if you combine trying to do anything like that with tension then ... the pain becomes quite instant and quite severe”. Unfortunately, this could lead to a vicious cycle, if the person became tense, this increased their pain, which caused more tension. Stress and tension are situations that many participants found triggered additional pain. It usually took several years of chronic pain for the participants to identify and manage these triggers with any regularity. One participant illustrated this by stating: “I have got to make sure that I have my muscles in my shoulders just relaxed and my arm relaxed then I can fill out your form or write my name”.

FOCUS ON FUNCTION

Participants following this under-regulation style of strategies emphasised their functionality. This was at the expense of their management of pain-intensity. Participants using these strategies made an active decision, and used active strategies to focus on performing activities. Consequently, the participants would often do too much. In order to continue with their activities, they sometimes compartmentalised their pain from the rest of their experiences. They also made active decisions not

to adhere to suggested treatment.

By trying to do too much, participants increased their pain. This was common through all stages, and may relate to both general and specific activities. Some realised that this was a problem and then attempted to limit their activities. However, due to their vulnerability factors this was very difficult for most, and generally this resolution did not often result in long-term adaptive change. For example, two participants illustrated this by saying: *"I thought to myself 'don't overdo it this year, a year is long enough to be going on with this problem' ... I have had to learn to say no more often to protect myself"*, and *"I push myself too hard that's all. I finished up in hospital quite regularly by over doing things"*. If they did manage to modify their behaviour, they often took the completely opposite stance and undertook nearly no activities at all.

Many participants compartmentalised their pain, separating it from other aspects of their lives. When the pain was especially bad, they compartmentalised the painful days from other days. They coped with these painful days before returning to their normal life when the pain was less severe and they felt they could function better. They reported living one day at a time. For example, one participant stated: *"I don't really have a set day. I take everyday as it comes ... I take it day by day"*. Other participants separated the parts of their pain that they found most distressing. For example, the following participant separated fluctuating "nerve pain" from constant "joint pain" and said: *"the nerve pain is far more distressing in that I find it harder to tolerate ... the joint one I can live with, I can cope with that"*. Participants also identified activities, places, and times with pain. The participants would go to those places or do those activities only when they were in pain or allowing themselves to be affected by the pain.

Treatment often increased rather than decreased pain, at least in the short-term. Unfortunately, due to increased short-term pain, most participants did not continue with treatment, even though this may have provided them with long-term benefit. This was most common with physiotherapy, exercise, and stretching. The participants were intolerant of any immediate slight increase in pain. The strong possibility of large decreases in pain in the long-term was less salient to the participants.

3.5.10.2 Mis-Regulation Styles

Mis-regulation styles primarily focused on short-term pain reduction, rather than longer-term functionality. The participants used active strategies in an attempt to reduce their pain. Unfortunately, these strategies did not always have the desired effect. Difficulties arose when the participants were at a different stage in their chronic pain process than the management strategy was useful for, or there was a lack of balance between reducing pain and maintaining current and longer term functioning. These strategies were labelled counterproductive when they did not have the desired effect. For example they increased pain and/or disability when their intention was to reduce pain and/or disability and those who focussed on short-term pain management and employed pain-focussed strategies. These were ineffective in the longer-term, as they did not balance their pain with increasing function. Some participants appeared to be using appropriate pain-regulation strategies. However, they encountered problems or experienced a negative outcome, even though, when taken in isolation, the strategy may

seem appropriate. In the third style, which overlaps with the appropriate-regulation category, there was a mis-match between the strategy chosen and the participants' position in the chronic pain process, creating an outcome problem.

COUNTER-PRODUCTIVE STRATEGIES

When using this collection of management strategies, the participants attempted to manage their pain, usually with a short-term emphasis. However, the strategies chosen were often counter-productive and, at least in the long-term, caused an increase in pain and/or a decrease in functionality. Many of these activities were designed to decrease short-term pain, or to avoid factors that increased pain in the short-term. Movement was one of the most common factors that were reported to increase pain. Although avoidance of movement in the short-term usually decreased short-term pain, it also decreased functionality, which in turn increased pain in the longer-term. Avoidance of activities and movement could be counterproductive. This was because it led to the avoidance of work, which was frequently an important source of self-worth. Pain-intensity appeared to increase as a result of attending to the pain. Some participants appeared to get into a situation where they were focusing on physical pain sensations to the exclusion of other sensations.

Movement was one of the most common pain-increasing factors for all participants. Obviously, different movements produced pain for different participants. Difficulties arose when the participants tried to reduce any movement that was painful. This usually led to further negative consequences and pain. For example, one participant said: *"I think if I was to put it into one word it would be movement, yeah I always think that it is movement that does it . . . movement is basically the cause of it, whether it be walking or working or lifting that is what it is that gets it going again after you have had a successful sit down. And when you move then that is just it"*. Those participants who were functioning well understood that movement that was painful was sometimes necessary to prevent increases in pain and decreases in mobility at a later stage. This realisation usually occurred later in the chronic pain process. Many of the participants interviewed had not reached this stage. They were still attempting to minimise all immediately painful movement.

Small movement was particularly painful for many participants. Typical examples included: *"the fine movement of my fingers hurts . . . like typing, um, or hand writing"* and *"if I try and do any writing or typing it will shoot up to 6, 7, 8 very quickly"*. Lifting things was difficult for those with torso and limb pain. This did not have to be heavy lifting; merely lifting a cup out of the microwave or an arm above the head greatly increased pain. An illustration included: *"doing anything that lifts my arm above my head and that I get a terrible fatigue sort of pain"*. Even general activities such as walking, climbing stairs or coughing caused intense pain to some of the participants. Examples of this included: *"going up and down stairs to the shower in the morning is slow and painful"* and *"the nerve has a lot of fracture marks in it and it just zig zags between the two bones in the spine and if I trip or cough or have to strain on the loo it some how just closes it up and jams the nerve"*.

Exercise or stretching was usually initially painful for the participants. This may have been due to the lack of movement, exercise, and stretching that had been performed in the recent past. The problem

was that the participants did not continue with exercise or stretching when it caused pain, even though in the long-term it may have been very beneficial, reducing their pain and preventing further increases in pain. For example, one participant stated: *"stretching it or that kind of thing is painful"*. Participants who gradually started exercising, and continued, especially under the advice of a health-professional, found a reduction in their pain levels in the long-term. As with their other activities, the participants tended to do too much or no exercise. Therefore, typically, after doing no exercise for some time, they did a large amount of exercise and decided that it was too painful and that it re-aggravated their pain. For example, one participant reported: *"I started retraining ... both cycling and running too complicated it. And that in fact just completely re-aggravated it"*. Consequently, participants usually decided to discontinue exercise.

Participants generally had a good understanding of which activities increased their pain. Sometimes these were very general. A typical example of this was: *"it would increase as I use it more during the day"*. However, most identified specific activities. For example, one participant stated: *"I know what brings it on, like at dancing, brushing my shoes on my right leg makes my back spasm, and like I can't shave my legs in the shower"*. If the participants could identify a few very specific activities that greatly increased their pain, they functioned well by avoiding those activities where possible. If the participants could only identify general activities that caused them pain, they began to avoid all activities. They would consequently do very little, for fear of increasing their pain. They usually engaged pain-avoidance strategies, which led to a complex pattern of behaviour and pain. This pattern of behaviour could become a vicious cycle when they later decided to ignore their pain and do the activities anyway. Behaving in this way caused problems, as they did not approach their activities in moderation, rather they tried to do many activities. They found that performing many activities caused them intense pain and therefore they again concluded that they could not do any activity. This cycle often led to a depressed state.

For most participants work activities caused them additional pain. Examples of this included: *"I get that when I'm working, when I use the computer"* and *"caused especially directly by too much writing"*. Pain at work presented a difficulty for the participants, as generally work was very important to them. As a consequence of their pain, participants often left their employment and lapsed into doing very little with their day. For some participants, work had previously been the only activity in which they were involved. Further, they would work very long hours to the exclusion of other activities. As a result, when they were no longer working, they had nothing to replace it. This often contributed to depression and a general decrease in functioning.

Participants reported that if they paid attention to their pain, they perceived a higher level of pain and it influenced their lives more. A "bad day" emotionally led to increased pain. For example, one participant stated: *"if you have a bad day, you really notice it and you feel that you are going to die"*. The participants who acknowledged and understood the psychological factors that influenced their pain were better able to modify and adapt these factors to understand and prevent increases in their pain. Unfortunately, most participants did not acknowledge these factors in a positive way.

In order to cope with their pain, especially when severe, many participants focused purely on their

physical sensations. They ignored the context or any cognitive or emotional aspects to their pain. They appeared to “close off” from the rest of the world, focusing only on their pain. For example, two participants illustrated this by saying: *“this is just something that I have to deal with on my own and shut it down, case closed”* and *“I’ve sort of closed down”*. In the long-term this was a dysfunctional way to cope with their chronic pain. It could be argued that this was an adaptive way to cope with very short-term acute pain, because it allows the area to rest. However, for those suffering from chronic pain it was maladaptive. Emphasis only on painful physical sensations increases a person’s attention to their pain. This was contrasted with distraction techniques, which appeared to be functionally adaptive. This singular focus increased the amount of pain in which the person perceived him or herself. Such a focus creates a vicious cycle as the person again concentrated on their physical sensations.

PAIN-FOCUSED STRATEGIES

Pain-focussed strategies were active strategies aimed only at reducing short-term pain. They were labelled as mis-regulatory because they were based on a lack of balance between reducing pain and maintaining or increasing longer-term functionality. Consequently, these strategies resulted in less than ideal outcomes. These strategies tended to be physical in nature. While they may have been effective in reducing pain in the acute phase, they were often only effective in decreasing chronic pain in the short-term. These strategies usually prohibited adaptive functioning, as well as the usual activities of everyday life. Consequently they had a negative impact on the participants’ lives and functioning.

Positioning had a major influence on pain intensity. Overall posture, as well as the exact positioning of the body, contributed significantly to pain. Examples included: *“when I lean forward ... bending over causes the pain to flare up”* and *“the position I hold it in is probably the most important, one of the main things that effect the pain”*. Many of the participants reported a particular position that they could get into which reduced their pain to a minimum. For example, one participant reported: *“I have specific positions that I sit in so I know how to get comfortable”*. The amount of pain reduction depended on the amount of pain that was initially present. The more severe the pain, the less likely it was that positioning would reduce it. Positioning, as a pain reduction strategy, had the disadvantage of not facilitating other activities appropriate to everyday living as the participant was often immobile. Posture was also important. An illustration of this was: *“I do sit with a cushion behind my back if I am sitting watching TV ... dancing is really good for it because it gives you good posture”*.

Temperature was reported to have an influence on pain-levels. Cold increased pain for most participants. This may have been either a suggested application of cold, such as an ice pack, or cold weather. For example, one participant speaking about factors that increased her pain said: *“especially the cold”*. One participant found that ice decreased his pain, he said: *“I was icing it ... for a while that was the only way around it, just sit down and watch the television, that and applying the RICE thing”*. Most participants found that heat decreased their pain. Usually this was in the form of hot water, typically a bath or shower. Typical examples of this included: *“I will spend a lot of time in a*

hot bath", *"in the morning, when I am stiff, when I get to the hot shower, I play the hot water on my shoulders to try and warm them up"* and *"heat sometimes can make it feel better"*. While temperature change may be a useful strategy for decreasing acute pain, it did not seem to lead to functional activity in a chronic pain situation or a long-term reduction in pain. This may be as temperature change is a passive treatment, which does little to prevent long-term pain increase, although it may be effective short-term. Also it usually prevented the person from doing other activities.

The most common strategy for decreasing pain was to stop activities. A typical example included: *"I can't do what I want to do I have still got to nurse it all the time"*. This provided only short-term relief of pain intensity, and it decreased functioning. Participants often avoided activities that caused them pain. Examples provided by the participants included: *"its not a problem because I know how to avoid it ... it doesn't hurt if I do certain things to avoid it"* and *"I usually spend the rest of the day avoiding that kind of thing"*. Many of the participants used rest as a strategy to reduce their pain. For example, *"when it happens I just rest"*. Most reported that rest was not totally effective, but that it usually prevented the pain from worsening, and sometimes decreased the pain. For example, typical participants reported: *"I try and rest, yeah, it works sometimes, it all depends on how intense the pain is"*, *"resting can make it better but it has to be for long enough"*, and *"it sort of stops it at that level and stops it from getting worse"*. However, as the next participant clearly indicated, pain is difficult to manage because he either rested and had little pain, or performed activities and experienced pain, he said: *"for a couple of months there I did almost nothing which basically everything was fine then ... if totally rested it seems to be fine. ... I have no idea what to do to avoid it, apart from becoming a vegetable. I wouldn't be happy with that, a complete drop in the quality of life"*. Participants could identify little middle-ground. Rest was the pain management strategy that most participants used the majority of the time. This was especially true in the early part of their chronic pain process. The difficulty with this strategy, as already illustrated, is that it does not assist in pain reduction or functioning in the longer-term. It may in fact be incompatible with other more adaptive pain management strategies such as exercise, thus reducing the use of these adaptive strategies. Rest was commonly associated with a range of implicit theories related to pain indicating additional physical damage. Using these implicit theories, it is easy to suggest that acute pain management strategies are needed, as further injury is constantly thought to be occurring. When the chronic pain process was in its latter stages, and more active pain reduction strategies were being used, rest appeared to have a lesser role in pain management.

Many of the participants received surgical intervention. This often caused further injury, chronic pain, and disability. Surgery rarely produced a long-term reduction in pain-intensity for these participants. It did occasionally reduce specific functional disability, but surgery usually distracted the person from using more adaptive management strategies. Of the participants who had undergone surgery, many had received numerous surgical interventions. For example, one participant stated: *"I have been in hospital eight times. And with that, plus recovering, I have been pretty busy"*. Often the latter surgical interventions were reported to be conducted to assist with pain or disability caused by previous surgery. Thus, surgery did not appear to provide long-term reduction in pain-intensity or an increase in functioning for the majority of participants.

OUTCOME-PROBLEM STRATEGIES

Strategies that result in an outcome problem can include any of the appropriate regulation strategies, if they are used at an inappropriate time or in an inappropriate situation. When used appropriately these strategies are labelled appropriate-regulation strategies. These are often designed for acute pain treatment or cure, rather than chronic pain management. Therefore, while they may be effective at some time in the process, they are categorised as ineffective because their outcome is not positive, not because the strategy is, in itself, inherently flawed. These strategies often focus the participants' attention to their pain and provide the hope and expectation of a cure rather than management. Therefore they reduce other adaptive chronic pain-behaviours.

Some of the participants measured their pain on a scale. They recorded the results to monitor their own progress. For example, one participant reported: *"sometimes my pain, I sort of measure it, I do a measurement of stress or pain-levels sometimes, to think I am not going mad ... I would do a pain-level and a few weeks later come back and see how it had, um, compared"*. This practice was typically followed in the early stages of the chronic pain process when the participants expected their pain to be improving. It provided perceived predictability to the pain process, as the participants were able to monitor its changes and to determine whether it was in fact worsening. This provided comfort to some participants, especially when their pain was bad, for they knew that they had been through this before and that their pain would decrease. The participants identifying patterns to their pain, and visualising minor flare-ups in pain as minor appeared to be useful as a short-term strategy. However, pain monitoring appeared to be ineffective as a long-term method of self-regulation. Unfortunately for most of the participants, their pain was not decreasing over the long-term. This led to dissatisfaction and despair. For example, one participant stated: *"it has never stopped getting worse"*.

Some participants reported that they had been tested for many diseases and disorders that could have been causing their pain. This was particularly common when the pain was of insidious onset, the health-professionals did not have a definite diagnosis, or when the pain was out of proportion with the diagnosis or physiological damage. For example, one participant was extremely concerned about having arthritis; he said: *"I've been fully checked for arthritis three times ... I've been checked so many times for it and nothing, the last one was within the last six months"*. Tests were sometimes repeated many times. A negative result did not provide a positive outcome. As no treatment could be immediately implemented, it kept the participants focussed on finding a cure rather than managing their current pain.

Physiotherapy was another common treatment strategy. Physiotherapists used a variety of different treatment techniques that depended upon the injury, the participant, and the health-professional. Strategies included assessment, rest, exercise, stretching, ultrasound, massage, heat, and acupuncture. Examples provided by the participants included: *"movement, stretching, heat treatment, um, um, he even tried a few times, he tried acupuncture a few times"* and *"like each person has got a slightly different philosophy, but heat treatment, ultrasound and, um, things like just massage and, um, various exercises"*. Physiotherapy was used as part of a multidisciplinary treatment programme, or alone. For example, one participant stated that as a multidisciplinary assessment: *"I got assessed*

by a physiotherapist who looked at physical structural musculoskeletal stuff". Physiotherapists often prescribed specific exercises for the participants to complete. An illustration of this was: *"I am also doing exercise, like shoulder exercise, like stretching back"*. Yet again, many of the participants did not complete these exercises because they increased their short-term pain. Stretching was an important part of rehabilitating movement and function. This was often initially painful for the participants, but was effective if it was conscientiously performed. For example, one participant reported: *"I was having physio which was quite painful too, you know, the stretches and the intensive sort of massage and things . . . my hands are responding to stretching"*. Unfortunately, most of the participants placed their emphasis on finding an immediate cure for their pain. They did not consider a gradual repair and reduction of pain. This led them to be disappointed, disillusioned and frustrated. So, although this type of treatment may have been effective if properly followed, there was an outcome-problem when the participants did not apply it properly. Often the participants would move from one physiotherapist to another when the treatment they were receiving did not provide an immediate cure. A typical illustration was: *"I would go and see various physios in the hope that they could be of use"*.

Physiotherapists helped the participants to develop strategies to prevent further pain and functional disability in addition to working to reduce their immediate pain. Most of the participants did not partake in longer-term pain prevention strategies. This was especially true if there was no obvious and immediate benefit to their pain-intensity. They were unwilling to cause themselves additional pain in the short-term, even if this would mean a reduction in pain in the longer-term. This created difficulty with the outcome of their treatment. The participants were more likely to take preventative action as time passed and their chronic pain progressed.

Most participants were prescribed rest and restricted exercise. This was particularly in the early stages of their pain. Initially, most of the participants found it very difficult to rest or reduce activities for long. As soon as some benefit was shown, they reverted back to their usual active lifestyles, once again increasing their pain. The participants often used long-term chronic pain management strategies in the acute pain stage and short-term, acute pain management strategies, which were not effective, with their longer-term chronic pain. These timing issues led to an outcome-difficulty. The participants that effectively used the longer-term strategies with chronic pain often had positive outcomes.

3.5.10.3 Appropriate-Regulation Styles

Appropriate regulation strategies achieve a balance between pain-intensity and pain management and long-term functioning. It has two regulation styles. Those with an outcome problem have been discussed above, in section 3.5.10.2, as they overlap with the mis-regulation category of strategies. The other is appropriate management and is discussed below in this section. These strategies effectively manage to achieve a balance between pain and functioning, and obtain a positive outcome. However, this is not necessarily the resolution of pain.

APPROPRIATE MANAGEMENT STRATEGIES

The appropriate-management style has an emphasis on long-term functioning, while still managing pain-intensity in the short and long-term. Strategies that emphasised long-term functioning were more likely to achieve a positive outcome. This is the best-fit option. It is important that the participants achieve a balance between managing their pain-intensity and maintaining or increasing their functionality.

Education and information relating to the participants' particular chronic pain problem, and chronic pain in general, helped the pain appear more predictable and controllable. This assisted the participants to function more adaptively. One participant said whilst discussing information: *"that helps me coping I think"*. Although perhaps not affecting the pain directly, information may have enabled the participants to better understand what was happening to them. It therefore reduced stress and functional disability, usually decreasing perceived pain-intensity, in addition to helping the participants chose appropriate management strategies. Education also taught the participants strategies to cope with and manage their pain. For example, one participant said after receiving education about organising his medication: *"I set my medication out now and if there's medication in one little compartment that it shouldn't be then I haven't taken it"*. They also learnt to utilise the health-system to their own benefit. They developed aids that assisted in their daily living. For example, one participant reported: *"I have made myself little tools and attachments that go in, that I would normally be holding with my left hand, I just clip them in"*. There appeared to be a relationship between education and the participants changing implicit theories about the causes and management of their chronic pain that was reported to be effective. For example, one participant reported: *"he [surgeon] says that it is the message of the pain is in the nervous system and that it keeps on being sent to the brain. I am quite happy to accept that some of it is the message that is stuck in the nervous system which fits the chronic pain"*. The participants who changed their strategies for managing their chronic pain to those focussed more on management and balancing pain and function were more likely to have a positive outcome.

A method described by the participants for lessening the impact of their pain was to develop a positive attitude. For example, the participants reported thoughts such as: *"I am sure that will get better gradually"* and *"I would say I am tough I can cope with that"*. Some participants described this as having a *"bubbly personality"*. This positive attitude can be highly unrealistic and may lead the participants to place themselves in situations that increased their pain long-term. Nevertheless, when positive thinking was employed realistically, the participants found it to be an effective means to continue functioning despite their pain. Once again, this change appeared to follow a change in their implicit theories, particularly those that identified where pain fitted in their lives.

Participants usually used active relaxation strategies only after suffering chronic pain for several years. Those that were actively using relaxation usually reported functioning to a higher degree than those using more passive methods of pain reduction. Most participants were sceptical about the usefulness of formally taught relaxation until they tried it and found that it did work. They viewed it as a *"psychological method"* which would not work for their *"physical pain"*. Relaxation provided the

benefit of being both distracting and reducing painful muscle tension. Relaxation could take many forms, ranging from traditional relaxation which was taught in classes, through to individual methods unique to each participant. For example, one participant said: *"I've done lots of relaxation classes and I go to a meditation class"*.

It was not uncommon for participants to rename their pain. They would name it *"tingling"* or *"numbness"* instead of pain. This strategy typically resulted in a more positive outcome as it allowed them to continue an active and functioning lifestyle.

While health-professional treatment may not eliminate pain, it sometimes provided sufficient relief to allow the participants to function at a higher level. Their pain was no longer the whole focus of their lives. Treatment that provided moderate relief was effective when it was used to increase activity and functioning. For example, one participant said: *"it gave me enough, um, relief I think to, um, help me sort of get on and look at the future ... whereas now as it comes back knowing what I know I can put in strategies before the pain becomes all consuming"*. If the participants were still focussed on finding an immediate cure, health-professional treatment often decreased functioning. This is because, while engaging in health-professional treatment, they did little other activity while they were waiting for a cure. This produced disappointment when pain remained.

Undertaking specific exercises, including stretching, were strategies that usually decreased pain in the long-term and increased functional ability. In the short-term these strategies usually increased pain. For exercise to succeed, the participants needed to follow their programme. Unfortunately, most did not adhere to health-professional suggested programmes. Those that did adhere to such programmes reported positive results. One participant said: *"that was a gradual process ... gradually build up the intensity and everything like that and um, at first it just hurt like hell but I persisted with it and the body adjusted ... I knew ultimately that it was improving because it was building up the muscle"*. To partake in an exercise programme the participants usually needed to change their implicit theories from those associating any pain with additional physical damage, to those linking short-term pain with the long-term pain management process. Participants who used exercise to decrease pain were usually functioning at a higher level than those using more passive methods. Those using exercise as a pain-management method had typically spent many years trying exercise intermittently and unsuccessfully. Initially they would stop because the short-term increases in pain were more salient than the prospect of long-term gain. With time they realised the long-term benefits.

Psychosocial assessment and treatment was often associated with multidisciplinary management. This was usually one of the last management strategies to be attempted in the chronic pain process. For example, one participant stated about psychosocial assessment: *"they had a psychosocial assessment, and an occupational therapist ... tried to establish what it was, how it [pain] was affecting me in my life"*. Occupational therapy was not always used as part of a multidisciplinary package. For example, one participant reported: *"she [an occupational therapist] said that my work station was at fault"*. Some of the participants discussed multidimensional pain management programmes. These programmes combined many different strategies in order to teach pain management. They were not usually directed at reducing the pain, but rather at increasing the participants' skills in managing their

pain and reducing their functional disability. One participant was pleased to be doing a multidimensional pain management programme and said: *“they have also decided that I warrant going on the residential pain management course at [hospital], so I am there for three weeks”*.

In summary, seeking knowledge about their pain condition and possible treatments appeared to help the participants cope emotionally. This increased their likelihood of choosing an appropriate management strategy. Strategies designed to manage their reactions to pain were also helpful. Many participants described these as part of their personality and their positive approach to life. Active strategies, such as relaxation, which are physically and psychologically functional, were often very effective. Health-professional treatment was helpful to a limited extent if it directly targeted some need and it provided a long-term emphasis. Multidisciplinary treatment appeared to increase function as well as to reduce pain. This was the case even though it appeared that the aim of such programmes was to teach management skills rather than decrease pain. Other psychological strategies, such as distraction, renaming the pain and reducing other stressors, were also found to be effective.

3.5.11 OUTCOME

Outcome can be measured using two distinct, but often interrelated, constructs: first, subjective intensity of pain; and second, disability and beliefs regarding pain, its manageability, controllability, and enduring nature. Disability outcome has been divided into three constructs which exist on a continuum. The first, dysfunctionally managed chronic pain, leads back into the management process. This is discussed in section 3.5.11.1. The second, effective management of chronic pain, is a state that can exist for many years, and may feed back into the management process. Effectively managed chronic pain may, for short periods of time, lead to no pain. Theoretically, this could be permanent. Effectively managed chronic pain is discussed in section 3.5.11.2. This state of no pain is the third disability outcome, and is discussed in section 3.5.11.3. Due to selection procedures for this study, no participants fell into this category at the time of interview. However, some described having experienced short pain free periods. Therefore, it is suggested that this category exists, however it is not well grounded in the current data. Short and long-term efficacy is also discussed, in sections 3.5.11.4 and 3.5.11.5.

3.5.11.1 Dysfunctionally Managed Chronic Pain

Dysfunctional management of chronic pain resulted when the process or the outcome was undesirable, usually both. This often occurred when the participants and the health-professionals were attempting to manage the participant's chronic pain, but the pain was not being managed in a constructive or enduring way. Often pain, and/or disability, was increasing and the participants, and health-professionals, were becoming frustrated. The participants were often constantly seeking a more-effective treatment, while often only marginally complying with any treatment-regime, because of their beliefs and attitudes, lack of information or ability, or other factors. This was undesirable for both the participants and the health-professionals, and usually involved the participants seeking a different treatment process, either with a different health-professional and/or a different type of treat-

ment. It did sometimes lead the participants to “give up” and not attempt to actively manage their pain, at least for a short time. Thus, these participants fed back into the pain experience at the top of this section of the model.

3.5.11.2 Functionally Managed Chronic Pain

There are two parts to managed chronic pain: subjective pain-intensity and disability. Functional management of chronic pain is not necessarily related to a decrease in pain-intensity, it may relate to a decrease in disability. A participant functionally managing their chronic pain may still have a significant amount of pain in their lives. However, it is managed to the extent that they can function and participate in most of life’s activities.

3.5.11.3 No Pain or Disability

Obviously, if treatment is effective, and other factors are positive, then the person may be left with no pain or disability. This is the most desirable outcome. This outcome is conceptual, not grounded in the data of this research, due to participant selection, but common in everyday life.

3.5.11.4 Short-Term Efficacy

There were some short-term benefits from treatment strategies. These did not usually result in a total elimination of pain, rather a reduction in it. For example, one participant reported: “*its just that it is tolerable*”. Unfortunately this reduction in pain was not maintained over time. This is illustrated by participants stating: “*it improved things for, um, four and a half months*” and “*it has now deteriorated back to the point it was before*”.

Far more commonly, treatment was reported not to have any positive effect on the participants’ chronic pain. For example, a typical participant reported: “*various surgeries have not really affected it*”. The third possible outcome, after a positive effect and no effect, was that intervention or treatment caused further pain and damage in a number of participants. For example, participants reported: “*the physio didn’t help, it made it a lot worse, it really did*” and “*all these operations . . . screwed my arm up*”. When pain did reduce, the participants reported positive emotions and thoughts. For example, one participant said: “*yeah, it is marvellous isn’t it*”. However, these were usually short-lived. It was devastating for the participants when the pain returned. Many described consequently “*giving up*” on treatment for some time. An illustration of this was one participant saying: “*I had just given up and that it was not going to work*”. Some treatment procedures were described as extremely painful during, and soon after treatment, these sometimes did produce longer-term benefits to pain-intensity. For example, one participant stated: “*it can be incredibly painful at the time but it definitely works*”. Most participants, however, did not continue with a treatment that initially increased pain. This was even though there was a likelihood that the treatment would reduce pain in the long-term.

3.5.11.5 Long-Term Efficacy

In the longer-term, different treatments did relieve some aspects of the participants' pain and functional disability. An illustration of surgery helping was: "*[I] had the joint investigated because he thought there was a loose body because of the clunking and the movement and what he could feel when he bent it, that has gone now*". Usually, the pain returned with time. A typical example included: "*an intervention has been put in place and I have just take a step back, but then getting worse again has been speeded up and whenever an intervention has been put in place then going down that slippery slope has just been getting faster*". Treatment success was usually restricted to very specific areas of functioning rather than a complete reduction in the intensity of pain. This could be a reduction in a certain type of pain, or increased movement or activity.

While a treatment could be effective in the short-term, this did not always generalise to the long-term. Treatment outcome was moderated by many variables. These differed for each individual, for each type of treatment or management, and over time. For example, some participants developed tolerance to their medication. As a result, while the medication may have been effective initially, it became less effective over time and greater amounts of the medication were needed to produce positive effects. Addiction is another undesirable effect of medication. This again depended on the participant and was particularly common with narcotic painkillers. The effectiveness, and therefore the outcome, of a particular type of treatment, was usually affected by the intensity or severity of the pain and symptoms. For example, one participant said: "*I try and rest, yeah, it works sometimes, it all depends on how intense the pain is*". Effectiveness of treatment depended on the type of treatment, pain-intensity and the length of time over which it was used.

Treatment-efficacy and outcome depended on the participants' subjective opinion of what constituted effective treatment and positive outcome. Some participants, especially in the latter stages of their chronic pain process, regarded any reduction in pain or functional disability or arresting of the progression of pain, a treatment success. For example, "*it didn't get rid of the pain but it made such a substantial difference. I considered it a success*". This was very different from expectations early in the treatment process. Early in the chronic pain process treatment was judged as effective only if it completely eliminated or cured the pain. For example, one typical participant stated: "*that is the frustration ... it is still not 100%*". For most, treatment was judged as completely unsuccessful, leaving the participant to manage with their pain the best they could. This is illustrated by: "*it [treatment] does not make a damn bit of difference anyway*".

Treatment designed to reduce pain was most effective as part of a process rather than a means to an end. Physical reduction in pain-intensity, for a short amount of time, could enable a participant to re-evaluate his or her life, to learn skills, and to put in place more effective strategies for long-term pain management. Contemplation of this chain of strategies was beyond those who had recently experienced the onset of chronic pain. However, it was identified and used by some participants later in the chronic pain process. For example, the following participant had been in pain for decades. She said: "*it gave me enough, um, relief I think to, um, help me sort of get on and look at the future and develop some sort of idea and get to this point ... whereas now as it comes back knowing what I know*".

I can put in strategies before the pain becomes all consuming”.

There came a time in the chronic pain process where the participants no longer solely aimed for a cure. They focussed on stabilising their pain at a relatively low level of intensity, and reducing their functional disability. Some of the participants found that they preferred to have a slightly higher general pain-intensity, which was more stable, than to have a larger fluctuation in the intensity range, even if the intensity was lower at times. For example, the following participant rarely used transcutaneous electrical nerve stimulation (TENS) treatment because although it reduced pain it also increased its fluctuations. She said: *“I found myself yo-yoing more [using TENS] whereas if I didn’t use the TENS I just developed more mental tolerance so I could keep it at the level it was”.*

3.5.12 CONSEQUENCES OF CHRONIC PAIN

The participants identified many consequences of their chronic pain. While most of these were negative, they did identify some positive consequences. These can be separated into two categories: interpersonal and individual. These are discussed below in section 3.5.12.1. The negative consequences can be separated into four categories; work-related, interpersonal, psychological, and physical. These are discussed in section 3.5.12.2.

3.5.12.1 Positive Consequences

Chronic pain is commonly perceived very negatively. Despite this, the participants in this study did identify positive consequences to their chronic pain. An example included: *“there are positives with it ... I can do a hell of a lot that I couldn’t do before”.*

Positive consequences of chronic pain included positive changes to their lives and attitudes. Participants identified aspects of their lives that were very important to them. This helped them reframe their lives. Their pain also provided a means for them to meet their unmet needs. It allowed them to enjoy the care and concern of others, while avoiding less enjoyable chores. For some participants, pain became a scapegoat for a wide range of individual and interpersonal situations. Their pain could also bring financial reward. Some received a lump sum and/or wage-related compensation. These are discussed in more detail, with examples, below.

POSITIVE INTERPERSONAL CONSEQUENCES

Being in pain provided a means for some participants to get their social and interpersonal needs met. For many of the participants, pain was a vehicle for relating socially. Most of the participants had struggled with the skills of relating to others from a young age. Their pain provided a topic with which they could begin a conversation. Although, this could be a double-edged sword as the participants sometimes found it difficult when others noticed and commented on their pain. Their pain provided a channel by which they could express their needs and it provided a means to obtain intimacy. Some of the participants used their pain as a means of manipulating others. In the short-term, this appeared to be relatively effective. However, as time passed, significant others started avoiding them. This may have contributed to many of the participants’ relationships breaking down.

Pain could be an advantage in that it provided a legitimate reason for the participants to avoid the aspects of their lives that they found aversive. Usually this was subtle, and for most it was probably not a conscious decision. However, limiting their activities did allow them to choose which activities they would perform, and it left an escape route when they preferred not to complete a task. One participant described when she was younger and used her pain to escape undesirable activities. She said: *"there were times when I didn't want to do things and I knew what to do to make it [pain] come on"*.

All participants received some reinforcement for their pain-behaviours. Initially, in the acute phase of their pain, they received gifts, flowers, cards, care, and concern, especially if their pain resulted from an injury. Additional concern and gifts were received when undergoing invasive treatments, such as surgery. During these times significant others would be caring and attentive and complete activities for the participant. Acquaintances and strangers showed concern about their behaviour and pain, and would stop to talk. Consequently, the participants received social, emotional, and physical reinforcement for their pain-behaviour. Further, many participants enjoyed contact with understanding and supportive health-professionals. This was particularly important if the participant had few other social contacts.

In summary, interpersonally, chronic pain had the consequence of the participants getting some social interaction needs met, and they were able to avoid some negative aspects of interpersonal interaction. In addition, they often received care and concern when they displayed pain-behaviours.

POSITIVE INDIVIDUAL CONSEQUENCES

Some of the participants were able to identify positive consequences of having chronic pain that were personally applicable to them. Living with pain helped them reframe their lives and identify what was important to them. They identified simple things such as being able to drive, ride a bicycle, and go for walks as being particularly important. They also identified activities such as playing music, doing embroidery, and reading books, which became a treasure. Many of the participants reported that they had developed a better understanding of other disadvantaged or disabled people.

The participants occasionally used their pain as an excuse for failing or when things went wrong. This applied to a wide variety of activities from study or work, through to relationships and social activities. The following quote illustrates this with relation to studying: *"I used my arm again as an excuse for failing"*. In a similar vein, some participants also used their pain in a self-handicapping role. This meant that if they did not try hard, resulting in failure in an activity, they could use the excuse that it was because they were in pain and not because some more personal deficit. If they succeeded, despite not trying, they could then attribute this to their positive personal characteristics, thus attempting to maintain their self-esteem.

Most of the participants were receiving financial compensation or assistance. This was usually from the Accident Compensation Corporation (ACC). In its simplest form ACC paid for their treatment. For example, a typical participant stated: *"I was having physio at this time, which was mainly under ACC"*. Alternatively, ACC paid them an allowance, because they were not working, or they received

a lump-sum payment. It was interesting to note that all the participants who described the ACC had a positive opinion of this corporation. An illustration of this was: *"ACC have been really great ... I sort of just live off ACC which is really good"*.

In summary, as a consequence of their chronic pain the participants had a greater understanding of themselves and others. They could use pain as a reason for their existing shortcomings, thus maintaining self-esteem. Additionally, many participants received, monetary or other compensation due to their circumstances.

3.5.12.2 Negative Consequences

Chronic pain introduced a wide range of negative consequences in the participants' lives. These were collected and are described under the following headings: work-related, interpersonal, psychological, and physical. These distinctions were made, not because they were necessarily present, but because this was how the participants described their negative consequences. While separated in these ways, the consequences are, in actuality, interrelated. These consequences exist on a time-continuum; some happened immediately, while some consequences followed other consequences.

NEGATIVE WORK-RELATED CONSEQUENCES

Most participants were, at the very least, uncomfortable with the changes that chronic pain brought to their work situation. This often led to a change in their responsibilities, career choices, or their ability to work at all. This impacted on their self-esteem, social interaction, financial stability, and future vocational prospects.

Many participants had ceased working. Those that did not cease working altogether usually had to make changes in their employment. Examples of this included: *"it takes me longer to do the administrative slot than it did"*, *"I couldn't write on the board"*, *"I went back after 6 months. I was still doing the managers job, very limited"*, and *"I didn't sit all my exams"*. Alternatively, the participants were forced to consider different employment. Those who had pursued a career for a long period of time often did not consider changing to another vocational area. However, those who were young, especially if they were still training, considered different career options. For example, one participant stated: *"I find it frustrating, like there is a whole list of things that I can't do ... I can rule that out and there is everything that involves running or moving quicker than a walk on feet is bad and its sort of a bit limiting. There are several jobs that I can't do"*.

Many of the participants were not working at the time of interview. This is illustrated by the following quotes: *"I'm not working at the moment"*, *"the nerve pain and problems got so much worse that it got to the point that I could not work, I could not do anything"*, and *"I've been off work for three years"*. The transition from working long hours to not working at all was very difficult for many of the participants. For example, one participant stated in a hopeless tone: *"I don't have my business anymore. I've lost that already, my work has gone, my business"*. Others were threatened with job loss. For example, one participant stated: *"I thought I would have to resign"*. After the development of chronic pain it was typical that major work-changes in their lives led to the participants having

changed child-care or financial responsibilities. One participant illustrated this by saying: “[partner] left me with the kid and she was only like two years old, and I had just borrowed quarter of a million dollars to keep my business . . . so I closed my warehouse, moved the business home”.

NEGATIVE INTERPERSONAL CONSEQUENCES

Prior to the onset of their chronic pain, the participants lacked confidence in their interpersonal skills. Their chronic pain negatively influenced this. They found that their romantic and platonic relationships changed dramatically, and many relationships of both types were abandoned. The participants felt unable to create new relationships. As a result, they felt very alone, frustrated, and isolated. This is described in more detail with illustrations below.

In addition to having a large impact on the participants’ work and career, chronic pain had a large impact on the participants’ social life. This often meant that they could no longer perform activities with friends that they had previously taken for granted. In turn, this meant that they lost friendships and they often felt unable to make new friends. They generally did not take up other hobbies and interests that better suited their pain-related restrictions. For example, an athletic participant said: “*I can’t go and play tennis with my friends . . . I am supposedly quite fit and I can’t do something simple like have a game of tennis . . . I can’t go night clubbing or, like, dancing . . . I am just frustrated*”.

The participants were relatively socially isolated before the onset of their pain. This isolation increased after pain-onset. This was particularly true if the participants were prevented from working and no longer felt able to participate in the few hobbies or interests that they had, thus reducing their social activities. Their isolation increased further after the breakdown of relationships. Some participants reported that mutual friends sided with the other partner. The participants could identify few friends.

When the participants were in pain, their relationships changed, often dramatically. Frequently, the participants felt guilty because they could no longer do the activities they used to be able to do. For example, one participant stated: “*I feel guilty about that too, actually, because, um, [partner] would be working upstairs on his computer and I would feel like an, um, useless person*”. There was a major adjustment that needed to be made for a person in chronic pain. When the person was in acute pain the participant’s significant others were usually willing to temporarily take-over some duties. However, with chronic pain, the participant required this accommodation for a much longer, often an indefinite period of time. The accommodation a significant-other was prepared to make for a couple of weeks was very different from the accommodation they were willing to make for a few years or a lifetime. The extent of the needed accommodation often had a detrimental effect on long-term romantic relationships, especially as the pain was initially expected to be short-term. Many of the participants had sexual problems post-onset of pain, due to either the pain itself or the illness or injury that caused the pain, or to additional problems related to the initial pain. For example, one participant stated: “*it has impacted in a big way on my sex life*”. Nearly all of the participants’ marriages broke up post pain-onset. This in itself may not be significant, however, it points to the underlying interpersonal dysfunction that was characteristic of these participants. Relationships with children or grandchildren

also often changed, as the participants were less mobile. This was particularly distressing for the participants.

NEGATIVE PSYCHOLOGICAL CONSEQUENCES

Most of the negative psychological consequences appeared to be related to loss and trauma. The participants often felt many negative emotions. They avoided novel situations. Their perception of themselves changed. They no longer believed that they could do the things they had previously found easy, nor could they cope as well as they could before their pain-onset. They found that pain affected their memory, concentration, energy, motivation, and emotions. Additional difficulties included anxiety, depression, and drug addiction. These factors are discussed in more detail below.

The participants described many negative emotions, such as embarrassment, boredom, frustration, fear, helplessness and powerlessness, guilt, weakness, and demoralisation. The following quotes illustrate this: *"how embarrassed you feel"*, *"I get terribly bored"*, *"it's total frustration"*, *"it is ridiculous how helpless and weak I feel"*, *"I felt powerless"* and *"I get quite demoralised"*. Some reported that to cope with their pain and to control it at a reasonable level, they had to *"shut down"* their emotions. For example, one participant stated: *"I've sort of closed down ... I have restricted my normal reactions and my normal feelings"*.

Participants appeared to fear novelty. They were generally unwilling to undertake new activities that might have been more appropriate to their present level of pain and functioning. They were often not willing to meet new people; they feared that others would judge them in some way for being in pain. This followed from their low social-confidence and fear of negative evaluation. These were present prior to the onset of their pain. This apparent fear of novelty was further complicated as most participants experienced a depressive illness at some stage in their chronic pain process.

Once suffering from chronic pain, the participants found that they did not cope as well with everyday stressors and other pain. For example, one participant stated: *"I went to the dentist last Thursday and it has taken me a week to get over it ... I still can't believe how that trip to the dentist, what it did to me. I never realised that you walked such a fine line"*. The participants often discovered that pain controlled their lives. In the extreme, they reported ceasing activities that were not directly pain-related. A typical illustration of this included: *"it had taken over my life totally"*.

One of the major changes that accompanied chronic pain was a change in the participants' perception of themselves. This may have been specific and either short- or long-term. They commonly reported not feeling as competent and efficient as they did prior to pain-onset. For example, a typical participant reported: *"I'm probably not on top of things as I would like to be"*. Or they identified that they could not do activities that they could before. One participant illustrated this by saying: *"that is hard for me because I think 'God, I want to be able to seize the moment now' I don't like having to delay things"*. In a general sense, chronic pain changed the way the participants thought about themselves. Quotes by participants illustrating this included: *"it's basically, you are doing a whole new function"* and *"it has impacted in a big way on ... my ability to relax and feel good about my body"*.

Decreased concentration and memory were reported after pain-onset. Examples of this included:

"concentration lapses" and "it really does affect my concentration". However, it was unclear whether this was partially due to a major depressive episode, or due to the pain itself. A phenomenon often reported by the participants was the sapping of energy and motivation. They reported feeling that their pain consumed their energy and motivation, leaving them unable to perform even simple tasks. For example, "it took away my energy and my vitality". This may again have been related to depression, although it may have been a phenomenon in its own right. Some participants also said that they had "ceased functioning". They decided that most activities were either too much effort or caused too much pain to undertake. Participants stated: "pain and problems got so much worse that it got to the point that ... I could not do anything", "I had got very defeatist" and "I didn't go to school in the middle term because I was in too much pain".

Many of the participants described symptoms of depression that presented after they developed chronic pain. For many this resulted in a major depressive episode, which was often clinically treated. Typical examples included: "depressed ... I would come home from my stressful day's [work] and running a department, just feeling tearful and exhausted because the pain ... depressed" and "I had a large dose of clinical depression". These symptoms greatly interfered with their lives, and may well have exacerbated the difficulties they were having managing their chronic pain and functioning. Many of the participants had suicidal thoughts and plans. Some had attempted suicide, others reported not wanting to continue living. For example, one participant stated: "I had decided ... I was probably going to die anyway, just made it a bit quicker than it was going to happen".

Higher levels of anxiety were associated with chronic pain. The anxieties of daily living were described as being multiplied. The participants were fearful that they would be unable to complete activities, to work, or to socialise. They were often anxious about major pain-increases. They were also scared about the cause of their pain and thus their own mortality. This was particularly so when the participant's pain did not follow the usual course for the injury or illness with which they were diagnosed, or there was no clear diagnosis. Many were concerned that their health-professionals had missed something. One participant was scared that he had arthritis, he said: "I'm still freaking out about that".

Some of the participants developed an addiction to their prescribed painkillers. This became a problem in itself as well as impacting on the controllability of their pain. The participants often continued taking the prescribed medication for some time before admitting to themselves that they were addicted and that this was unhelpful for them. They would continue to take medication in increasing amounts before finally deciding to withdraw from it. One illustration included: "I really get into trouble with the old drugs eh, it's just as well that I realise it".

NEGATIVE PHYSICAL CONSEQUENCES

Chronic pain caused major changes in the physical lives of the participants. These often resulted from treatment or its side-effects. These negative physical consequences included loss of strength and movement, change in sleep habits and weight, and loss in ability to participate in a wide range of activities. Many of the participants described deformity and/or scarring, often caused by inter-

ventions, to which they responded with embarrassment and social withdrawal. Living with chronic pain caused many difficulties that may not otherwise have arisen. Some of these consequences were directly related to medical treatments. These included increased pain and disability. Other difficulties were associated with pain-avoidance. Examples included inappropriate use of the body in an attempt to lessen pain, and mental health difficulties, which had an additional physical impact. These consequences contributed to a vicious cycle of pain and disability.

The following side-effects of treatment were common, and somewhat dependent on the treatment, anti-inflammatory medication caused gastrointestinal problems, pain-killers caused addiction, other drugs caused allergies, and surgery caused further injury and complications. Many of the participants reported that surgery caused them additional pain. In some cases this was attributed to medical error. For others, these problems were explained by the participants as them not reacting as "expected" to treatment, or the problems were a side-effect of an invasive treatment causing scar tissue. For example, one participant stated: *"I only have 90 degree vision now with a bit of eye damage"*. Many of the participants believed that they were deformed, even though this was not often apparent to the interviewer. Examples included: *"I was developing a deformity"*. This perception of deformity and scarring led to social withdrawal in order to prevent perceived ridicule.

When attempting to reduce pain in one area, the participants found that additional strain, overuse, or inappropriate use of another area sometimes resulted. This caused additional damage to other parts of their body, sometimes producing additional regions of chronic pain. Typical examples provided by the participants included: *"[it] caused hip and back pain"* and *"there are other muscle imbalances as a consequence of it... I was always prone to like minor injuries, through like walking because I was like carrying it sort of thing"*.

Loss of movement was common amongst the chronic pain participants. In some instances this immediately followed acute pain, or acute re-injury. For example, one participant stated: *"I couldn't walk. That leg couldn't bend at all"*. Loss of movement also occurred as a result of long-term pain and restriction in movement, or because of surgical intervention. Range of movement decreased over time for all of the participants. For example, one participant reported: *"this one [arm] has never straightened since something went wrong in here"*. They all reported a loss in strength. This was usually across their whole body as they reduced their activity. Some reported a reduction in strength for a particular part of their body, usually the place where they reported pain. A typical illustration included: *"they [hands] are very weak"*.

Weight increased after pain-onset for most participants. This commonly followed a decrease in activity and exercise. For example, one participant reported: *"I used to be 12 stone and I'm like 18.5 stone now"*. Most participants found that their sleep was disrupted due to their pain. This often involved delayed sleep-onset - *"I usually get to sleep within an hour or two"*, awakening due to the pain - *"pain wakes me up"*, early-morning awakening - *"it is more like half past four that I get up now"*, or any combination of the above - *"now I just accept that I don't sleep well because of it"*.

Once suffering from chronic pain, all of the participants limited their activities at least in some areas. This often involved totally stopping previously enjoyed activities. Alternatively they modified an

activity or only completed part of that activity. An illustration provided by one participant was: *"what I mean by gardening is wandering around in the sunshine saying 'oh that one is lovely' and chopping a dead head off"*. Most participants found that the activities that they did do took longer to complete after the onset of their pain. A typical example included: *"I used to do the house work in three hours now it takes me three days"*.

The participants listed the activities they could no longer perform. These included a variety of everyday activities such as fine movement, hobbies and crafts, holding or carrying things, lifting small things, housework, opening doors, eating, and writing. The following quotes illustrate these points: *"I have great difficulty with tying my shoe laces and doing buttons"*, *"I wasn't able to sit up in bed and read"*, *"I can't hold a fork"*, *"I can't really lift my grandchildren up any more"*, *"I was unable to chop, um, carrots and things or peel potatoes"*, *"I still can't open doors"* and *"I mustn't write at all"*. Exercise and sport were other common activities in which the participants felt very limited. This was especially difficult for participants who were relatively active prior to pain-onset. A typical illustration of all the things a participant could no longer do included: *"I am quite an outdoors person ... I like to go tramping, doing cycle touring, um, I like um, I like doing kayaking ... I couldn't go swimming, I couldn't, I used to do weight training"*. An athletic participant reported: *"I wanted to be able to train"*. For some, the most difficult thing was not being able to do things with children. For example, one participant stated: *"I can't really clothe the kids any more"*. The participants reported how difficult it was not being able to do complete basic everyday tasks, and how much this distressed them. Unfortunately this frustration and distress often led them to ignore their pain and attempt to do too much too soon. For example, one participant stated: *"I am very very prone to trying to do things like I used to and it will all fall apart and I find it very hard inside to take that I can't do it now. And I try and it all falls apart and I am in a hell of a mess"*.

3.5.13 COGNITIVE AND EMOTIONAL ADJUSTMENT

To live and cope with their chronic pain and its consequences, the participants needed to make adjustments to their lives. These adjustments ranged on a continuum from the maladaptive to the adaptive. They can be separated into two areas: the participants' definition of themselves, involving their core schemas; and adjusting to a new way of life. The scope of these areas included managing their pain, a change in their bodily functions, a change in their activities of daily living, and a change in their work, social activities, and interpersonal and close relationships. The process of chronic pain usually involved much loss, grief, and trauma, and their consequences. These also necessitated adjustment.

Most participants, at least at some stage, acted passively and helplessly in their self-regulation. They believed there was nothing that they could do that would make any difference. They had in essence "given up". This tended to be an ineffective adjustment, leading to low levels of functioning. Participants spent varying amounts of time feeling helpless. An illustration of this included: *"[I] cannot reduce or control [my] pain"*. When asked whether he could change his pain, one participant replied: *"not really, no"*.

Pain is subjective, not objective. Consequently, many of the participants struggled to compare their

current situation with others who might have experienced a similar amount or type of pain. Illustrations of this included: *"I am told by everyone else that compared to what has happened to me ...but in my situation I don't know if I am doing good, bad or otherwise"* and *"but then compared to other people"*. Upward and downward comparisons are a coping technique. This can be seen as an evaluative process, comparing themselves with others. In order to feel good about themselves, the participants often normalised their pain and described it as *"common"* or *"normal"*. For example, one participant said: *"I hear that it is quite common"*. They may identify with a group of people who have chronic pain problems similar to their own and make direct comparisons about how they are doing with respect to this group.

The participants' outlook on their pain and its variables, and thus their adjustment, depended upon many factors. These included their position in the process of chronic pain, the skills they possessed, their recent experiences with treatment or management, how intense their pain was at the time, and the level and type of vulnerability variables they possessed. Some participants found that, given time, they began to adjust to their pain, accept it, and to tolerate the amount of pain they were in, although many of the participants had not yet reached this stage. Typical examples included: *"at first it just hurt like hell but I persisted with it and the body adjusted"* and *"eventually it starts to ease"*. Once the participants had adaptively adjusted to their pain they were able to continue their activities without overdoing things or needing to rest constantly. They no longer needed to constantly seek treatment or a cure, but were adaptively managing their pain. A common thought at this time was *"it is not that bad"*. For example, participants stated: *"I haven't really stopped anything because of the pain"*, and *"I am not one of these people that say, 'oooh it hurt I had better stop'"*. The participants had adaptively learned to live with the pain, and function despite it, rather than putting their lives on hold until their pain dissipated.

Several of the participants felt that their "personality" helped them function despite their pain. Some described themselves as having a "bubbly personality", such as *"just my usual bubbly self"*, or a *"stoical personality"*. Positive thinking also helped. Quotes illustrating this included: *"if I get through this I'll get through anything"* and *"I wouldn't let this pain beat me"*.

Most often the participants described ineffective methods of coping with their pain. They regularly described the change that pain made to their lives and they often reported that they had not coped well with their pain. Sometimes, the participants failed to identify or acknowledge their pain. For example, one participant stated: *"I was trying to convince me [that the pain was not real]"*. When trying to judge how they were managing and coping with their pain, the participants called on their past experiences or those of other people they knew who had experienced pain. However, they were often critical of how others coped with and managed pain. An illustration of this included: *"I think that my sister doesn't cope with it [pain] very well"*.

Many participants saw the changes in their pain as completely random, uncontrollable, and unpredictable. At other times they reported that activities increased or decreased their pain, but there was an air of resignation about not being able to do anything to affect their pain, even though they reported evidence to the contrary. One participant said that he controlled his pain: *"terribly, I have no control*

...". However, he also said: *"I try and rest, yeah, it works sometimes"*. This was particularly true for participants who were not functioning adaptively in daily life. These participants tended to either do nothing at all, or to engage in a high number of activities, with no moderation.

Perceived control over pain had a positive effect for the participants. They reported that they could cope better with pain when they perceived that they had some control over it. It appeared that the perception of control was the important factor rather than actual control per se. Those with more perceived control reported functioning at a higher level. The following participant was content not having surgery, because she knew that she could have it at any time if she wanted. She said: *"I don't know if I'll ever have anything done to it, it's up to me, it could probably be done tomorrow if I wanted it done"*. By contrast, another participant felt that he had no control over his pain-levels, and that he could not even control his pain medication due to addiction. He said: *"with 'control' I am in the position that you probably know I have got a drug trouble and nothing seems to work"*. A third said: *"I can't reduce my pain, I mean if you reduce it, it doesn't really reduce, it is just the fact that you just sat there and did nothing"*.

Predictability of pain had a similar effect. Those who perceived that they could predict when their pain was going to be better or worse reported coping and functioning better with everyday activities. Pain predictability developed over time as the participants began to understand their daily fluctuations and identify which activities moderated their pain. Before developing this understanding, the daily changes appeared to the participants to be random and therefore unpredictable. Some participants had not yet reached the stage of understanding their pain's fluctuations, and their pain still felt unpredictable and uncontrollable. Examples of this included: *"there is no reason why it could not 'go again' at any stage, I have no idea what to do to avoid it, apart from becoming a vegetable"* and *"the system is so variable"*. The participants found that the unpredictability of their pain was particularly difficult. For example, participants stated: *"the unknowing ... I don't know if the pain will get better, you know, no one knows"*, and *"I have no idea if it would change or stay the same"*.

In summary, the cognitive and emotional adjustment of the participants to the ongoing management of their pain and disability is moderated by their vulnerability factors in addition to their implicit theories and the choices that they made about management of their pain. This adjustment in turn influenced their implicit theories and the choices that they made about further pain management. Thus, this was a cyclical process.

3.5.14 PATHWAYS THROUGH THE MANAGEMENT OF CHRONIC PAIN AND DISABILITY SECTION

The management of chronic pain and disability follows a person's progress in attempting to manage their chronic pain. It follows and is influenced by the acute pain section. In turn it operates in parallel with the pain and disability maintenance factors, which directly affect it. The management of chronic pain and disability section is illustrated in figure 3.5. Three possible pathways through the model will be considered and described. Although these are described in gender specific terms this is for ease of description, not because the pathways are gender specific.

A hypothetical person tracking through the right-hand side of the continua of this section of the model would experience the most maladaptive progression leading to a negative outcome of dysfunctionally managed chronic pain and a high level of disability and negative consequences. She would experience pain, although it would not necessarily be a discrete event. The pain would trigger implicit theories regarding pain, its management, illness, and health. These implicit theories would also include those concerning decisions regarding treatment, and the role that health-professionals play. For her, these theories would be generally maladaptive with little emphasis on holistic management. She would believe in a cure and that her health-professional should provide it. These beliefs would alternate with those which indicate that nothing could be done to help. In this case she would likely become helpless. These maladaptive implicit theories concerning treatment and health-professionals would influence her management strategy decisions. Her decisions would also be affected by the stage she was at in her treatment progression, other constraints, and the style and influence of significant others and health-professionals. A person tracking down this hypothetical right-hand pathway would most likely be at an early stage in her treatment progression. She would have many constraints. Significant others would be unhelpful in the adaptive management of her chronic pain, or they might be counter-productive in their attempt to help. The health-professional's style would not mesh effectively with her style. This would lead her to choose a maladaptive management strategy from the right-hand side of figure 3.5. She would likely be under-regulated, either focusing on function at the expense of managing her pain or not identifying her need for pain management. Alternatively, she may be mis-regulated, applying counter-productive strategies, or using strategies with only a short-term focus. Her pain outcome is likely to be negative, resulting in many negative consequences and dysfunctionally managed chronic pain, with a high level of disability. Consequently, her adjustment is likely to be maladaptive, with much trauma, loss, and grief. This adjustment, in turn, would influence her implicit theories and pain experience, continuing the cycle. This hypothetical person would continue to suffer from dysfunctionally managed chronic pain and a high level of disability.

A person hypothetically following a pathway through the middle of the continua of this section, as shown by figure 3.5, is likely to have some adaptive and some maladaptive implicit theories in response to her pain experience. Her constraints would be moderate in number and impact. Significant others would be helpful in some ways, but unhelpful in others. She would interact positively with some of the styles of her health-professionals. These would better match her own implicit theories, than those of a person taking a right-hand pathway. She would have suffered from chronic pain for some time, but she would be part of the way towards managing her pain in her treatment progression. Such a hypothetical person would be likely to choose a mis-regulated strategy to manage her pain. She would chose strategies which might be counter-productive, pain-focussed, and/or which provided only a short-term balance, rather than a strategy which provided a balance between pain and function. Alternatively, she might use strategies that are appropriate, but not adaptively applicable for the specific situation in which she finds herself. Therefore, her situation and her treatment are mismatched, which does not provide for a positive outcome. As a result, her outcome would be mixed with a moderate number and impact of negative consequences. Her pain would most probably still be dysfunctionally managed much of the time, but not to the extent of those following a right-hand

pathway. In line with this, her adjustment would have some adaptive and some maladaptive aspects. This again feeds back to her implicit theories and continuing pain experience.

A person hypothetically following the left-hand side of the continua of this section would be likely to have mainly adaptive implicit theories regarding the management of his pain and the ability of health-professionals to assist him. He would have few constraints and helpful significant others (with respect to his pain management). He is likely to have experienced chronic pain for a considerable time, having progressed to management ideals. Alternatively he may have had a very low level of background / vulnerability and pain and disability maintenance factors. The styles of health-professionals are likely to be more consistent with his own implicit theories and ideas for the management of chronic pain. Therefore, the strategies that he would choose are likely to involve appropriate-regulation. There may be a mis-match between his situation and the strategy chosen leading to an outcome-problem, however, he is most likely to choose strategies that appropriately manage his chronic pain. Therefore, such a person's outcome would be positive, leading to few negative consequences and appropriately managed chronic pain, perhaps with some periods of time with no chronic pain. He is likely to be adaptively adjusted with few unresolved grief, trauma, or loss issues and a low level of disability. These will feedback into his implicit theories maintaining and enhancing his positive progress as he cycles through this section.

Each person is likely to change where they are placed on at least some of these continua each time they cycle through this section of the model. As a result this is a constantly changing process for each participant and for each participant over time. Only one iteration through this process has been described in these hypothetical examples.

3.5.15 SUMMARY OF THE MANAGEMENT OF CHRONIC PAIN AND DISABILITY RESULTS SECTION

Several varying and interacting factors influenced the participants' management of their chronic pain and disability. The participants cycled through the management of chronic pain and disability sequence many times. Each iteration affected their management style. While the changes oscillated from maladaptive to adaptive, the participants generally progressed slowly towards more effective management with reduced disability and better adjustment.

The participants' implicit theories played a significant role in their management of their chronic pain and disability. These originated from their experiences, including the background / vulnerability and pain and disability maintenance factors, and their experience with acute pain. Their implicit theories interacted with those of their significant others and their health-professionals, along with constraints to determine their choice of management strategy. This choice of strategy resulted in a treatment outcome, consequences, and adjustments. These included changes in pain-intensity, functioning and disability. In turn, these affected the participants' pain experience and implicit theories. This provided feedback completing the management loop. This was a continuing cycle for as long as the participants were in chronic pain.

3.6 SUMMARY OF THE RESULTS CHAPTER

The information gathered from interviewing participants who were currently suffering from chronic pain enabled the construction of a model for the development and maintenance of chronic pain and disability. The model was divided into four interacting sections. The background / vulnerability section covered the time before the onset of acute pain. The factors in this section were based around the concept of attachment. It is proposed that these factors increased the likelihood that the participants would develop chronic pain, at least once they had developed acute pain. These factors continued after the onset of pain as discussed in the pain and disability maintenance section. In this section, similar factors as found in the background / vulnerability section were involved in the maintenance of pain and disability by interacting with the acute pain and management of chronic pain and disability sections. The acute pain and management of chronic pain and disability sections are specifically pain-related. The acute pain section revolves around seeking treatment, treatment adherence, and treatment outcome in a cyclical process. This led on to the management of chronic pain and disability section after six-months, the time pain is considered to be chronic for this study. In the management of chronic pain and disability section implicit theories played a major role. These have a strong basis in attachment. These implicit theories impacted on a decision making process with regards to management strategies, which varied in adaptiveness. The application of management strategies resulted in treatment outcomes and varied consequences. These consequences in turn affected adjustment, which led to the top of this cyclical process.

Chapter 4

DISCUSSION

This discussion is broken into four sections. The first (section 4.1) discusses the concepts related to the background / vulnerability and pain and disability maintenance factors, primarily focusing on the core category of attachment. Section 4.2 discusses the concepts related to the acute pain and management of chronic pain sections. Much of this discussion centers on health-professional - patient relationships, implicit theories, management strategies, consequences, and adjustment. A summary of the entire theory is presented in section 4.3 followed by a discussion of the existing theories related to chronic pain in section 4.4.

4.1 DISCUSSION OF BACKGROUND / VULNERABILITY AND PAIN AND DISABILITY MAINTENANCE FACTORS

The background / vulnerability factors of this theory are very similar to the pain and disability maintenance factors. This is to be expected, as these two sections examine the participants' lives, including factors that were not initially obviously directly related to the onset of pain, its development, maintenance, management, or disability. These sections include factors both before and after the onset of chronic pain. Thus, the constructs involved relate to long-term beliefs, attitudes, behaviours, self-regulation, and the participants' ways of interacting with others. Differences exist between these two sections and the factors described in them. These are often a result of the onset of pain and the changes made to accommodate pain. They may also relate to the time-frame and developmental stage the participants were describing. For example, the participants' background contains childhood experiences, whereas, for most, the maintenance factors do not.

This chapter first presents a brief separate discussion of the background / vulnerability and pain and disability maintenance factors. The individual components or constructs of these two factors are then discussed in detail, including their theoretical underpinnings. These constructs are addressed in relation to the present study, and other chronic pain studies where available. A review of the literature for each construct is discussed in relation to chronic pain and other constructs found in this study. The discussion focuses on the main constructs identified in this study due to the large number of areas covered. Related areas of interest are also discussed where applicable.

4.1.1 REVIEW OF BACKGROUND / VULNERABILITY FACTORS

The participants described many experiences and difficulties which they experienced as they were growing up that may have increased their vulnerability to develop chronic pain. There was a great deal of commonality amongst the background / vulnerability factors for the different participants. However, there were no necessary or sufficient factors in the participant's background that inevitably predisposed them to develop chronic pain. Many of these background / vulnerability factors have been shown to make people, in general, vulnerable to a wide range of difficulties and disorders; they are not necessarily specific to chronic pain. The background / vulnerability factors identified in this study are also found in people presenting with a range of difficulties, such as eating disorders, child sexual offending, and other mental health issues (eg., Fairburn, 1997; Finkelhor, 1984; Hudson, Ward, & McCormack, 1999; Johnson, Tobin, & Enright, 1989; Laessle, Beumont, Butow, Lenneris, O'Connor, Pirke, Touyz, & Waadi, 1991; Marshall & Barbaree, 1990; Ward, Hudson, & Marshall, 1996; Ward, Hudson, Marshall, & Seigert, 1995a; Ward, Loudon, Hudson, & Marshall, 1995b; Wilson, 1993). These factors increase the likelihood that, given a significant pain-event, people will respond in a way that increases the probability of their developing chronic pain and disability. This study, due to its methodology, cannot determine whether people who develop chronic pain are more likely than the general population to experience these difficulties.

The participants described many negative situations in their early childhood. These often resulted in a lack of emotional closeness with, and availability of, their primary caregivers. This was attributed to major sickness or death of one or more parent, or the fact that the participants' parent, or parents, were working long-hours or were absent due to work. Many of the participants recalled feeling physically and/or emotionally abandoned. They reported assuming a great deal of responsibility in their families of origin. Despite not feeling close to their families during childhood, many of the participants retained a very close physical (although not emotional) attachment to their parents and families of origin, and felt responsible for their well-being. This regularly began in childhood, and extended into adulthood. It is possible that chronic pain, or depression often associated with chronic pain, may have affected the recall, interpretation and/or communication of these childhood events. This follows from the fact that memory and learning are known to be state dependent (Bower, 1981, 1986; Davison & Neale, 1990; Gelder, 1997). Memory is affected both by the state the person was in at the time of an event and their state at the time of recall. A person may remember an event more favourably if they are happy at the time of recall and visa versa.

Many of the participants had experienced a range of typically adverse and/or persistent major life events. These life events occurred across a wide range of situations both within and outside the participant's family of origin. The participants reported that they tried, somewhat unsuccessfully, to manage these events. They lacked skills, and thus were unable to adaptively manage such situations. These lack of skills followed from a lack of appropriate modelling of ways to manage various situations, and many of the participants learned unsuccessful, maladaptive ways of coping with adversity.

Most of the participants had also experienced painful illnesses and injuries prior to the development of their chronic pain. Again, they usually did not deal with these in an adaptive fashion. They developed

maladaptive and often rigid views and ideas about pain, illness, and their management and consequences. There were also many poor models of pain and illness in their families. It is likely that the participants modelled some of their beliefs and responses on the pain and illness experiences of others. It is unlikely that they modelled adaptive coping, as the participants usually did not demonstrate this.

As a consequence of their negative early interactions, the participants reported developing a negative view of themselves and their place in the world. They described struggling at an early age to be acknowledged, approved of, and to feel like they had gained acceptance from their parents, who were described as unresponsive, inconsistent, or overly critical. The participants displayed very rigid and clear ideas of "right" and "wrong", and "good" and "bad". They saw these concepts, among others, as dichotomous. They strove to do what they thought others would consider to be "good" or "right", hoping that this would bring acceptance. Their self-concept was usually very simple, concrete, and dichotomous. It revolved around trying to please, or win approval of, others. Most strove hard and achieved to a very high standard in a very specific area of their lives. In this way they attempted to maintain their fragile self-esteem. They described themselves negatively, but were very concerned that others should see them in a favourable light. They struggled to meet their high self-set standards and frequently considered themselves to have failed. As a result, they did not develop trust in others, and this led to thoughts that they were not worthy of attention from others. Yet they constantly strove for attention, acceptance, and closeness. The extent, invasiveness, and pervasiveness of their negative views of others contributed, along with their negative view of themselves, to other difficulties prior to their initial pain experience.

As a result of their negative views of others and themselves, they did not develop close and trusting relationships during their early years. This was possibly related to their views of themselves as inadequate and inferior, and also their views of others as untrustworthy. They described having few positive social interactions with their peers, or their families. The participants became very isolated and described having very few, if any, close friends from an early age. They reported having very few skills, particularly in the social area. Usually they described themselves as being different from their peers and not fitting in. They reported not joining in with the activities of others and additionally not feeling emotionally close to their peers. As a result, they reported behaving in a rejecting manner towards their peers. This further reduced their acceptance, and therefore their opportunities to develop and learn adaptive skills.

It appeared that the participants might not have learned from their families, or their peers, many of the important basic ideas and skills of social interaction and emotional regulation necessary for social competence. The participants described difficulties with communication starting in their families. There appeared to be strict unspoken rules about topics of communication, particularly related to emotional issues. As a result, they reported becoming isolated from their families, and peers, due to lack of learning and an inability to practice these skills. Because they were isolated and unable to appropriately communicate, especially verbally, they did not get their needs met. Many attempted to get their needs met by communicating in a non-verbal manner. Sometimes this resulted in physical

complaints and behaviours in an attempt to communicate emotional distress (somatisation), as the participants felt that they had no other way to express their feelings and needs. This communication was commonly in the form of school refusal and somatisation as they struggled to manage the social and emotional impact of school with their lack of interpersonal, emotional, and communicative skills. A common consequence saw the participants seek out isolated situations to reduce the need to communicate with others. This affected not only their opportunities to develop skills, but also their academic, social, and vocational choices.

Most of the participants reported very few conflict resolution skills and claimed that they tended to avoid conflict. This was perhaps due, for the most part, to a lack of appropriate modelling in their families, leading to a lack of skills. Their lack of appropriate conflict resolution may also be related to their beliefs that they were personally unworthy, that others were untrustworthy, and to their fear of rejection. Consequently they avoided conflict at all costs. Avoidance of conflict was perhaps another maladaptive way used to regulate affect.

The participants struggled to express their emotions, particularly negative ones. They were often only able to express their emotions somatically. They tended to regulate their affect in the short-term by using strategies that were maladaptive in the long-term. Examples are avoidance of conflict (as discussed immediately above), or focussing on only one very small aspect of their lives and excelling in that to the detriment of other activities. This one activity or aspect of their lives was often “blown out of proportion”. They would set very high standards of achievement, and direct all their energy into that one activity.

These methods of affect regulation created a very fragile situation. The participants usually described their affect regulation and self-esteem as relying on only one small aspect of their lives. The participants strived for perfection, and achieved very highly in specific tasks. This assisted them, at least in the short-term, in modulating their affect and self-esteem. These perfectionistic standards were often set for academic, and later, work goals. Although for some, sporting goals also played a major role. However, most struggled to achieve the very high perfectionistic standards that they set themselves. Consequently they often described feeling a failure. This was despite much external evidence that they were achieving highly. The participants reported that the perfectionistic standards that they imposed on themselves, and also those that they imposed on others and thought that others were imposing on them, served to isolate them more from others.

These core features of interpersonal competency, affect regulation, and personal and interactional style, were present in the background / vulnerability factors, and were active throughout the model. They are best construed as stable and underlying factors that contributed significantly to vulnerability to develop chronic pain. These factors also played a role as maintaining factors.

4.1.2 REVIEW OF PAIN AND DISABILITY MAINTENANCE FACTORS

The factors that were identified as influencing the maintenance of chronic pain and disability are very similar to the ones that have previously been seen to contribute to a person’s vulnerability to develop chronic pain. Although these two sections were separately and independently coded, similar

constructs emerged. Some of the constructs of pain and disability maintenance have more of an adult flavour, rather than the child or developmental flavour found in some of the background / vulnerability factors. It is not entirely surprising that the same constructs were found in both of these sections. Although the development of pain had a big impact on the whole of the participants' lives, their basic personality and ways of managing themselves and interacting with others and the world had not markedly changed. In some ways, these background / vulnerability factors became more rigid and entrenched as chronic pain and disability maintenance factors.

The participants' beliefs about themselves and others had not changed markedly with long-term pain. They were usually negative. These beliefs had a substantial impact on the participants' implicit theories about pain. This is covered in detail in the management of chronic pain and disability section in both the results and discussion. Their beliefs also affected their interactions with others. The participants tended to be isolated, untrusting and they withdrew from social interaction. This included interactions with health-professionals and significant others. These beliefs and the participants' interactional style were particularly prevalent with health-professionals. This follows from the fact that these interactions were likely to be stressful and distressing for the participants due to their past experiences. The participants continued to have poor interpersonal skills, including difficulties with communication and conflict resolution. This often led to further isolation and difficulties in managing pain and disability.

Developing and using appropriate self-regulation skills was an effort for the participants, particularly affect and pain-regulation skills. They often used maladaptive strategies, such as extreme perfectionism and workaholism. They lacked balance in their lives. They chose goals with what appeared to be small short-term gains and possible negative long-term consequences over those which may have offered larger long-term gains, but which may have involved some small negative short-term consequences. For example, transient conflict. They could not endure a small amount of short-term discomfort to address a conflict, even though this may have produced large long-term positive consequences. Another factor that affected this maintenance system was that they continued to have mostly negative major life-events, which they struggled to manage. It can be clearly seen how these factors, which although they did not initially seem directly related to pain, impacted in a considerable way on their experience and management of pain. This impact was in the thoughts and beliefs that they had about themselves, others and their pain, and therefore the choices that they made about treatment. It also affected the difficulties with affect regulation, social competence and interaction, as described by the participants. These factors have been regularly reported in the literature as directly impacting on the experience of pain (eg., Feeney & Ryan, 1994).

This discussion does not indicate that these personality and interactional variables cause pain, or chronic pain, for either the background / vulnerability or pain and disability maintaining factors. However, it does argue that once there is pain-onset, these variables may help to maintain pain, in addition with other physiological variables, which are only lightly touched on in this study. Therefore, these background / vulnerability and pain and disability maintaining factors are a critical component of chronic pain, or at least of the disability related to chronic pain. It is possible these background

/ vulnerability factors increase the likelihood of a person developing acute pain, however, exploring this relationship was beyond the scope of this study.

4.1.3 CONSTRUCTS OF THE BACKGROUND / VULNERABILITY AND PAIN AND DISABILITY MAINTENANCE FACTORS

Many of the constructs that appeared in this study are discussed in the general and chronic pain literature. How the participants viewed themselves, others and the world had a large impact on this proposed theory of chronic pain and disability. This can be most clearly discussed under the construct of attachment style. This is discussed in terms of many of the other constructs found in the background / vulnerability and pain and disability maintenance factors. Further constructs applicable to these sections are also discussed. These include: personality; relationships, including social support; communication, including somatisation and school refusal; and affect regulation, including perfectionism and workaholism.

4.1.3.1 Attachment

The description of factors in the participants' childhood and background bear a striking resemblance (see below) to Bartholomew's group prototype of fearful attachment style (K. Bartholomew, written personal communication, 1991). The similarity to a fearful attachment style is also very clear when it is examined in the context of the other constructs in the pain and disability maintenance section of this theory. Bartholomew (K. Bartholomew, written personal communication, 1991) describes people with a fearful attachment style as having a negative self-model and a negative other-model. She suggests that the key features of this are low self-confidence, high self-consciousness, and fear of rejection, which cause avoidance of intimacy. The person experiences conflicting motives of both wanting intimacy, while at the same time fearing it. The prototype for fearful attachment is as follows (K. Bartholomew, written personal communication, 1991):

"Fearful individuals come across as insecure, hesitant, vulnerable, and self-conscious. They are likely to engage in frequent nervous laughter. While fearful individuals are typically uncomfortable in the interview setting, many eventually warm up and become very disclosing ... When confronted with problems or upsetting matters, fearful individuals are emotionally reactive, but do not actively deal with their distress. They don't go to others for support. They acknowledge feeling bad but are hesitant to show that they are upset in front of others. They are not emotionally expressive, and don't cry in front of others.

Fearful individuals have negative self models. They score low in self-confidence ... Their negative self-model is reflected in high emotional dependence, high jealousy, and high separation anxiety. They are likely to worry that others don't like them, or that others view them as stupid, unattractive, or boring ... Fearful individuals will typically say that they wish to open up more or to become more socially confident.

Fearful individuals have difficulty developing trust. They want contact with others, however feel that they do not "fit in" and are extremely sensitive to any signs of rejection. When they are in

relationships, they are dependant, and often describe themselves as lonely. They are also likely to worry about never finding a relationship partner, or never being wanted by someone in the future.

Fearful individuals have negative other-model. They have low scores on proximity seeking; they avoid approaching others for support unless they feel certain of a positive response. They avoid conflict, crying in front of others, and self-disclosure because they are afraid of rejection. They are uncomfortable with affection, especially in public. They are shy and self-conscious ...

Fearful individuals may have a few close friendships but they are likely to have taken years to establish these friendships. They feel ... less in control over the course of the friendships. They are inhibited in their disclosure and avoid conflict in their friendships.

Fearful individuals find it difficult to become involved in romantic relationships. For example, when asked why they didn't date, one fearful person said "I don't want to be rejected or seen in a negative light." When involved in a romantic relationship, they assume a passive role, are very dependent, and tend to be more invested in the relationship than their partner. They are very insecure within the relationship and tend to blame themselves for problems ... They have difficulty openly communicating and showing feelings to their partners ... They avoid conflict in relationships, and have a hard time breaking off relationships (due to fear of ever finding another relationship)."

The participants of this study closely fitted this fearfully attached prototype. When interviewed, they presented as insecure, hesitant, and many of them frequently laughed nervously. Although they initially appeared nervous, by the end of the interviews many of them had become extremely disclosing. They did not use active coping strategies; in particular, using the support of others. The participants were very careful to express very few negative emotions. They had very low self-confidence and were extremely concerned that others would evaluate them negatively. The participants regularly talked about wanting to be closer, and more confident, expressive, and open with others, but always finding barriers. They had great difficulty trusting others and were fearful of rejection. They expected others to make the first approach. The participants described feeling lonely and having very few friends. They became very invested, usually in one close relationship, and feared never finding another relationship. They went to great lengths to avoid conflict and denied obvious difficulties in relationships. Great communication difficulties were described within the participants' relationships, especially expressing their emotions. This is consistent with the above prototype of fearful attachment. As a result of the centrality of attachment style to this theory, attachment will be discussed in detail below.

CONCEPTUALISATION OF ATTACHMENT

Researchers have conceptualised attachment in many ways. Prominent amongst these are placing people into categories, rating people on dimensions, and rating likeness to prototypes. There have also been several variants of these conceptualisations. Each has its advantages and disadvantages. The category method places people into groups, either directly, or indirectly as to where they lie on dimensions. This method assumes that people come in discrete types. It also assumes that between-group variance is large and within-group variance small, however this is not necessarily the case. The

dimensional method calls for people to be rated along one or more (usually two or three) dimensions. These are assumed to be independent, and therefore non-interactive, with each other. An advantage is that there is no arbitrary cut-off that includes or excludes people from any category. However, in reality, many people find dimensions difficult to rate. The third conceptualisation is that of a prototype. With the prototype method, each prototype has common features. Group members are measured on how well they match, or differ from, this prototype. Often a relationships style questionnaire is used as an indirect measure of prototypes, and people can show parts of more than one prototypical attachment pattern. Ratings of prototypes are related to clear patterns of interpersonal problems and behavioural patterns shown by self and other-report. Griffin and Bartholomew (1994) suggest that the prototype as a whole is more than the sum of the parts. The parts are the different dimensions. They claim that measures of prototypes add interpretational and predictive power above and beyond that of categories or dimensions.

Different people have labelled attachment styles with different names. They have also distinguished between adult and child attachment. For example, Kobak and Sceery (1988) discussed three kinds of attachment “dismissing”, “secure”, and “preoccupied” (also see Feeney (1998), and Main, Kaplan, and Cassidy (1985)). Other researchers used another three-category system of “secure”, “avoidant”, and “anxious / ambivalent” attachment styles (Collins & Read, 1990; Feeney & Noller, 1990; Feeney, Noller, & Callan, 1994; Feeney & Ryan, 1994; Hazen & Shaver, 1987, 1990; Hendrick & Hendrick, 1989; Levy & Davis, 1988; Mikulincer, Florian, & Weller, 1993; Priel & Shamai, 1995; Shaver & Hazen, 1988; Rholes, Simpson, & Stevens, 1998). Still others have used either four categories or prototypes “secure”, “preoccupied”, “dismissing”, and “fearful”, or two dimensions “model of self”, and “model of others” (Bartholomew, 1990; Griffin & Bartholomew, 1994; Mikail *et al.*, 1994). The four categories or prototypes are often presented lining up beside the two dimensions (Bartholomew, 1990; Griffin & Bartholomew, 1994; Mikail *et al.*, 1994). In this four-category or prototype model, the two forms of adult avoidance of intimacy are classified as “dismissing” and “fearful”. Fearful attachment style is described as a conscious desire for social contact that is inhibited by fears of its consequences and the feeling of not deserving the love and support of others (Bartholomew, 1990).

These different labelling and categorising systems made the literature difficult to integrate. However, some conclusions could be drawn. Because of differences in the ways researchers have categorised attachment styles, research reported in this literature review is mainly in terms of secure and insecure attachment. In addition, Perlman and Bartholomew (1994) discuss issues of measurement of attachment style through the use of questionnaires. Measurement of attachment style poses a difficulty because people are likely to have multiple internal working models that contribute to attachment behaviour. The questionnaires measure attachment once and only in one situation; therefore, they may miss the complexity of this construct. Most of the attachment research measures attachment styles using these questionnaires. It is likely that the dominant attachment style will be evident when the person is under stress (Mikulincer *et al.*, 1993; Rholes *et al.*, 1998). However, this does not often occur when attachment style is measured via a questionnaire. This difficulty of measuring attachment style is a further limitation of this literature review.

DEVELOPMENT OF ATTACHMENT

Bowlby (1969, 1973, 1980, 1988) discussed the attachment construct in four books on attachment. Bowlby initially discussed it in terms of infant attachment, suggesting it was genetically based, and saw attachment as a protective biological function that was triggered when a person was faced with threat. Bowlby defined attachment as a set of behaviours that are designed to increase proximity to a significant-other. Following these hypothesis, attachment-behaviour is most prominent when the person is under threat.

Ainsworth (1979; Ainsworth, Blehar, Waters, & Wall, 1978) also undertook pioneering research with infants' attachment to their mothers. They used the classic "strange situation". This involved a playing child and the researchers observing his or her behaviour in the presence and absence of their mother and a stranger. As a result of behaviour in the strange situation, and other observations, the researchers categorised the young children into three attachment styles "secure", "avoidant", and "ambivalent". They suggested that these attachment styles are developed in the first twelve to twenty-four months of age.

Securely attached youngsters were observed to be comfortable playing when their mothers were present and to be friendly to strangers. They became distressed when their mothers left, but were easily comforted when they returned. This attachment style categorised about 65% of children. Avoidantly attached youngsters paid little attention to their mothers, and did not seem distressed when they left. They usually ignored their mothers when they returned, being comforted as easily by the stranger as their mothers. There appeared to be conflict in the mother-child relationship with these children. Approximately 25% of children fit this category. Ambivalently attached children did not play comfortably in the strange situation, preferring to stay very close to their mothers. They became very distressed when their mothers left, but appeared ambivalent towards them when they returned. They both sought and resisted physical contact. Again there appeared to be conflict in this relationship. The ambivalent attachment style categorised about 10% of children. Ainsworth (1979; Ainsworth *et al.*, 1978) suggested that the two forms of insecure attachment are associated with inconsistent or unresponsive caregiving.

Main *et al.* (1985), and Bowlby (1988) extended the concept of childhood attachment to adulthood. Adult attachment was thought to stem from childhood attachment. It influences appraisals of interaction and provides rules for behaviour in interpersonal situations. Adult attachment is particularly related to the person's view of themselves and how others will react and interact with them. It is prevalent in stressful or distressing situations or when the person feels threatened. In their research, Hazen and Shaver (1994) found that 56% of adults were securely attached, 24% avoidantly attached and, 20% had an anxious/ambivalent attachment style. These results are similar to figures found for children.

Over the last decade, much research has been conducted in the area of adult attachment. This includes Bartholomew and Horowitz (1991) who presented a model of adult attachment that divided the avoidant attachment style into fearful and dismissing categories. They also renamed the ambivalently attachment style as preoccupied attachment style. They used two orthogonal axes, view of self

and view of others, both with a positive and negative anchor, to create four categories. They named these: "secure", "dismissing", "preoccupied", and "fearful". Securely attached people have a positive view both of themselves and others. Dismissingly attached people have a positive view of themselves, but a negative view of others, whereas those with preoccupied attachment, have a negative view of themselves, and a positive view of others. Finally, fearfully attached individuals have a negative view of both themselves and others.

Humans are biologically predisposed to form close relationships. One of our basic needs is that of security (Hazen & Shaver, 1994). Attachment styles develop from experiences of regulating distress related to attachment figures. This creates rules that are generalised and then used in future distressing situations (Feeney & Ryan, 1994). Parents are primarily responsible for the development of attachment styles in childhood. Later, peers serve similar attachment functions, satisfying needs for social support and security. Previous social environments largely determine individual differences in thoughts, feelings, and behaviours. These differences are maintained by mental models constructed from experience of actual relationships (Hazen & Shaver, 1994). The concepts of attachment and mental models, appear to be very similar to the concept of schemas as discussed under cognitive theories in the introduction to this thesis. Williams (1997) suggests that self-schema is a cognitive structure of relatively enduring beliefs that a person holds about themselves, others and the world, and that this guides interactions. These beliefs may be adaptive or maladaptive. Williams (1997) suggests that these beliefs guide illness-behaviour, including interactions with health-professionals.

People with different attachment styles reported different childhood experiences. Strategies used to achieve "security" depend upon a history of regulating distress. If a parent rejects a child's attempt to gain comfort there is a negative outcome, and therefore alternative methods of coping are tried. This concept can be applied to social as well as parent-child relationships (Kobak & Sceery, 1988). Generally, people who are insecurely attached describe their childhood relationships with their parents negatively (Hazen & Shaver, 1987). It is likely that parents of fearfully attached people expressed much negative affect. This would have led to the child becoming fearful and therefore learning to avoid conflict. These people most likely experienced more rejection from their peers (Bartholomew, 1990). This perceived rejection might be related to Kagan's (1989) temperamental theory of behavioural inhibition. Kagan (1989) suggests that behaviourally inhibited children might be predisposed to developing a fearful attachment style when they feel rejected by their families and peers. Differently attached people described their parents, childhood events, and social and intimate interactions differently (Bartholomew, 1990; Feeney & Noller, 1990; Kobak & Sceery, 1988). In adulthood, anxiety and distress are primary motivators. However, adult attachment can also result from desire for caregiving or sexual activity (Hazen & Shaver, 1994).

In summary, attachment styles are developed initially in response to interaction with primary caregivers. They are then cultivated and maintained by interactions with close and extended family, and peers. Insecurely attached people reported that they had negative interactions with parents in their childhood. Secure attachment is the most common attachment style and leads to the most adaptive adjustment.

Attachment style has been found in the literature to be related to many of the issues described by the participants of this study. Issues surrounding attachment and emotional regulation, work, relationships, well-being, and health, illness and pain are discussed below. These areas are closely related to issues described by the participants of this study. However, not all of these issues have been previously described in the chronic pain literature.

ATTACHMENT AND EMOTIONAL REGULATION

Attachment theory is often seen as a theory of affect regulation, or at least encompassing affect regulation (Hazen & Shaver, 1994; Kobak & Sceery, 1988; Simpson, 1990). Negative emotionality has been found to be associated with insecure attachment, and less negative affect with secure attachment (Feeney & Ryan, 1994; Kobak & Sceery, 1988; Mikulincer & Florian, 1998). Attachment has also been seen as influencing coping styles. As Mikulincer and Florian (1998) say: "attachment style is a valid predictor of the way in which people cope with stressful events" (p. 161). Serious emotional difficulties have been found with a fearful attachment style (Bartholomew, 1990). Additionally, people's attachment style is most obvious when they are under stress (Mikulincer *et al.*, 1993; Rholes *et al.*, 1998). In fact, attachment styles can be understood as rules that guide responses to challenging situations (Kobak & Sceery, 1988). Mikulincer *et al.* (1993) suggests that a diathesis stress model may apply. They suggest an "insecure attachment style seems to act as a predispositional factor to emotional maladjustment, which becomes evident mainly in stressful situations" (p. 824). As was evident in this study, chronic pain is an inherently stressful condition. Attachment style responses were found to become particularly evident under stressful situations, both related to chronic pain and other life stressors. The participants in this study displayed an insecure, primarily fearful, attachment style.

Attachment working models may help people manage distress. Secure attachment assists the positive appraisal of situations. It allows a person to constructively cope and therefore leads to improved well-being and adjustment. A secure attachment style is an inner resource to help cope with life's difficulties. An insecure attachment style may detract from a person's resilience. When this happens they have inadequate and unstable affect regulation and low self-efficacy in managing their own distress. Their working model exaggerates the threat, irreversibility, hopelessness, and uncontrollability of situations, to which they react with much distress. They view others as untrustworthy and, therefore, rely only on themselves (Mikulincer & Florian, 1998). Insecurely attached people have been found to be hostile, anxious, and hold negative and untrusting views. They find conflict distressing and avoid it if possible (Mikulincer & Florian, 1998). Securely attached people deal with distress by using problem-solving skills and by seeking support (Mikulincer & Florian, 1998). Avoidantly attached people restrict their acknowledgment of the distress. They are compulsively self-reliant and do not display negative affect (Mikulincer & Florian, 1998). The participants interviewed for this study demonstrated many of the difficulties associated with insecure attachment. In particular, they displayed difficulties managing distress, they exaggerated threats in situations, and were generally mistrusting of others.

Negative emotionality and distress is commonly associated with insecure attachment. There is a strong correlation between negative emotionality and symptom report (Feeney & Ryan, 1994). Insecurely attached people report more negative affect (Simpson, 1990) and higher distress in stressful situations (Mikulincer *et al.*, 1993). Securely attached people are less likely to be anxious or depressed (Priel & Shamai, 1995). Attachment style has been linked with several specific emotions, in particular, negative emotions. Insecurely attached people have been found to experience and report more stress, distress, to be more depressed, anxious, irritable, hostile, shameful, angry, and lonely, with poorer well-being (Atkinson, Paglia, Coolbear, Niccols, Parker, & Guger, 2000; Hazen & Shaver, 1987, 1990; Kobak & Sceery, 1988; Mikulincer & Florian, 1998; Mikulincer *et al.*, 1993; Priel & Shamai, 1995). They have a higher frequency of negative and untrusting cognitions and lower self-confidence. They are self-critical, have high autonomy, and a higher fear of negative evaluation (Kobak & Sceery, 1988; Mikulincer & Florian, 1998). The participants of the present study reported symptoms of anxiety and depression, together with negative emotions such as frustration, hopelessness and helplessness and negative thinking. This is consistent with insecure attachment.

Insecure attachment has also been found to be associated with physical symptoms, alcohol consumption, and eating disorders. These can play a part in affect regulation (Mikulincer & Florian, 1998; Zuroff & Fitzpatrick, 1995). Early attachment experiences may teach people that stressful situations are unpredictable, unstable, and distressing. Such people may learn that they are unable to relieve their distress. As a result, adversity is seen as threatening and uncontrollable. This causes strong emotional distress, which may continue even after the termination of the stressful situation. This follows from the insecurely attached person's sense of helplessness and lack of support and, therefore, their inability to successfully work through the trauma. These differences may be the result of different cognitive schema. These working models may generalise to many situations, different ways of coping, and emotional reactions, including pain situations (Mikulincer *et al.*, 1993; Williams, 1997). Insecurely attached people are at risk from a number of problems for which they have few resources to cope. This was consistent with the participants of the present study, as they suffered from difficulties associated with insecure attachment. They often saw situations and their pain as uncontrollable and unpredictable and, therefore, very threatening. They also lacked support to help them manage these situations. This was true in general, not just specifically related to their pain.

Insecurely attached people have been found to use different emotional regulation strategies than securely attached people. Insecurely attached people report higher levels of somatisation, avoidance, intrusion, and distancing, as well as using more emotion-focused coping strategies than securely attached people (Mikulincer *et al.*, 1993). Avoidantly attached people tend to use strategies that do not acknowledge distress (Kobak & Sceery, 1988). Secure attachment comes from positive experiences, therefore, securely attached people have trust in themselves, others, and the world. This creates a sense that stressful experiences are manageable. These people have optimistic beliefs, self-confidence, a sense of self-efficacy and control. They seek support when they need it. These are resilience factors that may buffer psychological stress by fostering a constructive attitude to life. An insecure attachment style may detract from a person's resilience. Instead of positive factors, they have inadequate and unstable affect regulation strategies. These include poor problem-solving skills,

low self-esteem, low self-confidence and a low sense of self-efficacy in managing their distress. Because of the working models avoidantly attached people use, they exaggerate the threat, irreversibility, helplessness, and uncontrollability of situations, as a result, they experience distress (Kobak & Sceery, 1988; Mikulincer & Florian, 1998; Roberts & Noller, 1998). Because of this, insecure attachment style “can be viewed as a potential risk factor, leading to poor coping and to maladjustment” (Mikulincer & Florian, 1998, p. 143). The participants in the present study appeared to appraise situations in a negative way. They somatised many emotions and emotional difficulties. They appeared to have few resilience factors, particularly very little social support, because they were very untrusting of others. As a result, they coped poorly and did not manage situations adaptively.

Influenced by, and influencing, people’s emotional regulation, are their beliefs and behaviours regarding social support. In particular, insecurely attached individuals perceived that they received less social support, and that they did receive they were less satisfied with (Priel & Shamai, 1995). They also reported fewer support-seeking strategies than securely attached people (Mikulincer *et al.*, 1993). While insecurely attached individuals have low social support, securely attached individuals have high social support (Kobak & Sceery, 1988). This is partly due to the support-seeking strategies of insecurely attached people. They have fewer strategies than securely attached people, and those they do have are governed by rules that restrict support-seeking (Kobak & Sceery, 1988; Mikulincer *et al.*, 1993). Satisfaction with social support predicts distress beyond that predicted by attachment style (Priel & Shamai, 1995). The support a person perceives contributes to self-regulation, and predicts effective coping, well-being, and psychological and physical health. Expected or perceived support is a principal self-regulating mechanism (Priel & Shamai, 1995). The participants in this study were generally dissatisfied with their social support. They often rejected the small amount of support that they did receive, which did not help in their affect regulation.

In summary, attachment styles are thought to strongly influence affect regulation and are particularly related to, and triggered by, stressful situations. People with insecure attachment styles, as demonstrated by the participants in the current study, experienced difficulties managing their stress and distress. They often exaggerated the amount of threat inherent in situations. The participants reported difficulties asking for assistance due to their mistrust in others. This is consistent with insecure attachment styles. Insecure attachment is also associated with negative affect. Negative affect was common in participants in this study. People with an insecure attachment style, including the participants in the current study, experienced difficulties with mental health disorders. They perceived many situations, including their chronic pain, as uncontrollable and unpredictable. They did not ask others for help to manage their distress. They appraised their social support negatively, as is common with insecurely attached people. This lack of positive interaction with others may follow from their difficulties in trusting others. Insecurely attached people tend to appraise many situations negatively. This was particularly common with the participants in this study, especially in interpersonal situations. They had many maladaptive ways of managing their emotions. One of their maladaptive coping skills included somatising emotional difficulties. Somatisation has also been found among insecurely attached people.

ATTACHMENT AND WORK

The participants of the present study encountered difficulties with their work. This was usually with working too hard and for too many hours to the detriment of their interpersonal relationships and lifestyle balance. This is further discussed in section 4.1.3.8.2. This is consistent with the literature reporting on work and insecure attachment styles, as described below.

Attachment style has been found to affect the working lives of people. This maybe related to their attempt to regulate their emotions. Avoidantly attached people often use work to avoid social interaction. Work can interfere with their close relationships. They report being dissatisfied with their jobs. Despite this, they are unlikely to take holidays that they enjoy. This is in direct contrast to the work experience of securely attached people. Securely attached people tend to have high self-confidence at work with little fear of failure. They value their work, but also value their relationships. As a result, they do not let their work interfere with their relationships. They do not use work to satisfy their need for love, acceptance, or to avoid social interaction. Anxious/ambivalently attached people have a different experience with work from securely attached people and from avoidantly attached people. Anxious/ambivalently attached people find that relationships interfere with their work. They therefore fear rejection due to poor performance (Hazen & Shaver, 1990). People with insecure attachment styles experience difficulties with their work, particularly difficulties with job-satisfaction and balancing their work and interpersonal lives.

ATTACHMENT AND RELATIONSHIPS

The participants in the present study reported difficulties with their intimate relationships. They described difficulties in trusting others and reported negative relationship experiences. This is consistent with an insecure attachment style. The effect of attachment style on relationships has been well documented in the literature, and is discussed below.

Bartholomew (1990), who has extensively studied attachment and relationships, sums up relationships by saying: "satisfying intimate relationships are the most important source of most people's happiness and sense of meaning in life" (p. 147). Attachment theory explains why, and how, close relationships play a critical role in life-adjustment (Hazen & Shaver, 1994). Attachment style has been shown to affect both social and interpersonal relationships. This can be seen from a young age with secure children exhibiting more smiling and affect sharing with peers. These children are also more socially competent and have a greater number of friends (Kobak & Sceery, 1988).

Hazen and Shaver (1987) suggested that people with different attachment styles have different relationship experiences. This may, in part, be due to differing views of themselves and others. Working models may play a role in initiating negative evaluations of the relationship (Rholes *et al.*, 1998). The working models people construct of themselves and their relationships are related to attachment style. People with different attachment styles hold different beliefs about the course of intimate relationships, availability and trustworthiness of intimate partners, and about themselves. Insecurely attached people tend to have shorter relationships, report more negative relationship experiences, and hold more negative beliefs about love. These beliefs may form part of a vicious cycle, which affects

behaviour and, therefore, relationship outcomes (Hazen & Shaver, 1987). The continuity of relationship style is partly due to a person's mental models of themselves and others. Attachment style is related to these mental models and is based on the developmental experiences the person has with their parents (Hazen & Shaver, 1987). Adding to continuity is the fact that matching is found between the attachment style of a person's partner and their own parents' attachment style, especially for their opposite-sex parent (Collins & Read, 1990). Therefore, people may choose partners to match their parents' attachment styles. This in turn makes their own attachment style more stable. The different beliefs differently attached people hold are likely to be acted out in behaviour, therefore evoking the expected response and maintaining the beliefs and therefore the stability of the attachment style.

Adult attachment can be seen as an attempt to regulate affect in the context of close relationships. Insecurely attached individuals achieve this by inhibiting expression of negative affect. However, they experience high negative affect because of their negative view of themselves and others, and their low self-confidence (Bartholomew, 1990).

Attachment groups differ in their self-disclosure. Feeney *et al.* (1994) found that avoidantly attached individuals were low in self-disclosure and had a low tolerance for highly-disclosing people, whereas anxious / ambivalently attached individuals have a high self-disclosure pattern but lack reciprocity and flexibility. In each case, this was because they were, first and foremost, meeting their own attachment needs. The participants in the present study were generally very disclosing, especially in the latter stages of the interviews. Reciprocity could not be assessed due to the relationship-inequality demands of the interviews.

Affect regulation has been linked to communication patterns, including conflict resolution, expressiveness, and the avoidance of intimacy (Collins & Read, 1990; Feeney *et al.*, 1994). The participants in the current study reported acting very passively. They generally did not use assertiveness to meet their needs. They described difficulties with communication and conflict resolution and reported desiring more skills in these areas. This fits with the proposed fearful attachment style of the participants in this study, and has been well documented in the literature. Avoidantly attached people tend to have a dysfunctional relationship style with poor communication (Feeney *et al.*, 1994; Mikulincer & Florian, 1998; Roberts & Noller, 1998). They also typically lack the ability to compromise and avoid conflict in intimate situations (Feeney *et al.*, 1994; Mikulincer & Florian, 1998; Roberts & Noller, 1998). Fearfully attached people characteristically have difficulties with passivity and lack assertiveness (Roberts & Noller, 1998).

In addition to communication and conflict resolution difficulties, people with different attachment styles differ in their approach to relationships. Fearfully attached people desire social contact, but they are mistrustful and fear rejection. They experience distress in social situations, or they avoid them altogether, especially if they believe they might be negatively evaluated. Fearfully attached people have difficulty with social interactions and they are hypersensitive to social approval and disapproval. As a result, they have no opportunity to see either themselves, or others, in a different light. They become involved in an approach-avoidance cycle, in which they become distressed if they are involved in a relationship because they fear rejection, but if they are not in a relationship they become distressed

because they lack intimacy (Bartholomew, 1990). Avoidantly attached people are less likely to provide emotional support to others; if they do, they feel uncomfortable. Unfortunately, relationships that have little support often become dysfunctional (Rholes *et al.*, 1998). Insecurely attached people are also likely to have greater negative affect when faced with separation from significant others (Feeney, 1998). Consequently, relationships involving people with an insecure attachment style will either remain very superficial, involving little support or comfort if there is little stress in the relationship, or be damaged due to the avoidant person's interpersonal style (Rholes *et al.*, 1998). When a person with an insecure attachment style becomes involved in interpersonal interaction they behave in one of several ways. They may be hostile or passive in social situations, or they might be seen as introverted, aloof, or socially avoidant. Their negative perceptions of themselves and others are reinforced by the hostile and rejecting responses that they evoke from others. This interaction style offers no protection against adverse life-events that a supportive intimate relationship might offer, and presents as a risk factor for marital difficulties, as it influences both partner-selection and interpersonal interaction (Bartholomew, 1990). This is typical of the descriptions of the interpersonal interactions and relationship experiences of the participants in this current study. In contrast, securely attached people are more likely to use a variety of coping strategies, directly problem-solve, and report positive relationships (Feeney, 1998).

In summary, attachment styles can predict much about social and interpersonal behaviour from a young age. Attachment style is related to the beliefs a person holds about themselves and others. People with a secure attachment style are likely to be more confident and trusting of others than those with an insecure attachment style. This difference in behaviour elicits a different response from the people they interact with. These responses may serve to maintain an individual's attachment style. In the present study, most participants described behaviour and interactional styles consistent with a fearful attachment style. This was evident from their memories of their development. In particular, this related to the participants' difficulties in both trusting and interacting positively and confidently with others. They described themselves as being isolated and fearing rejection, but desiring social interaction. They also reported high levels of negative affect, which they failed to express appropriately. This was consistent with the interactions of fearfully attached individuals. Other signs of a fearful attachment style described by the participants included difficulties with intimacy, communication, conflict resolution, and they were rarely assertive. The participants in this study described many of the relationship difficulties discussed in the literature relevant to a fearful attachment style.

ATTACHMENT AND WELL-BEING

The participants of this study exhibited many of the difficulties that have been shown by the literature to relate fearful attachment style to well-being. This was particularly evident in their response to loss, especially of partners, and in managing their chronic pain, which also involved much loss. They also experienced other difficulties consistent with a fearful attachment style, such as mental illness, poor achievement, job disruption, and job loss. The literature associated with attachment style and well-being is discussed below.

Attachment style is not only related to many emotional and interpersonal factors, but also to psychological and physical well-being. Bowlby (1973) suggested that childhood attachment is linked to the ability to create affective bonds in adulthood, as well as other difficulties, such as marital difficulties, and mental and personality disorders. Research has related the quality of personal relationships with health status (Feeney & Ryan, 1994). Attachment theory was initially created to understand the reaction of people to loss and separation, which are two of life's major stressors (Bowlby, 1969, 1973, 1980). Loneliness and isolation are commonly part of a person's fearful attachment style. They are also risk factors for psychological and physical disorders (Bartholomew, 1990). Perception of support contributes to self-regulation and predicts effective coping, well-being, and psychological and physical health (Brennan & Shaver, 1995; Priel & Shamai, 1995). Securely attached people have been found to have greater well-being and fewer colds and flu (Hazen & Shaver, 1990). Unfortunately, as is described above, insecurely attached people perceive that they receive less social support. Indeed, the participants in the present study perceived very little social support. They struggled to bond interpersonally, experienced many difficulties, and reported much isolation and loneliness.

Attachment style affects how people deal with significant life events. Example of these are the prospect of their own death, man-made stressful situations, interpersonal loss situations, parenthood, and coping with chronic pain. Securely attached people have a stronger belief that they can cope, they see the crisis as less threatening, they use more adaptive coping strategies, and they experience less distress. Attachment style also affects how people manage personal failure. Insecurely attached people experience problems functioning after failure (Mikulincer & Florian, 1998). Disruption to, or loss of, relationships, which is common in those with a fearful attachment style, increases the susceptibility of a person to car accidents, alcohol abuse, mental illness, disease, death, poor job performance, and poor achievement (Brennan & Shaver, 1995; Hazen & Shaver, 1994). Insecure attachment has profound psychological, physical, and occupational consequences. As Mikulincer *et al.* (1993) say "attachment theory may provide a valid and important framework for understanding the ways in which people cope with the impact of traumatic events and the efficacy with which they deal with a related emotional distress" (p. 823). The participants in the present study struggled to cope with and manage a wide range of stressful situations, especially interpersonal situations, loss of relationships, failure, and physical and mental health difficulties, including chronic pain.

ATTACHMENT AND HEALTH, ILLNESS, AND PAIN

Mikail *et al.* (1994) suggested a theoretically-based, attachment-related explanation for the development of chronic pain. They suggested that pain acts as a threat to the person and, therefore, that it was likely to elicit attachment-related behaviours. It follows that people with a different attachment styles would react to this pain-threat with different thoughts and behaviours. Particularly that securely attached people would react adaptively to acute pain by seeking advice from health-professionals. They would be able to clearly communicate with health-professionals about their difficulties, and would receive and follow the advice of health-professionals. This behaviour is likely to result in the resolution of their acute pain, rather than it leading to chronic pain. This is in contrast with people with a dismissive attachment style who are likely to be reluctant to seek health-professional help.

When they do seek help, they are unlikely to appropriately communicate their difficulties, being more likely to under-report their symptoms. Because they were unlikely to follow treatment advice, and their acute pain was more likely to continue, extending into chronic pain. People with a preoccupied attachment style often present as very symptom-focused. Consequently, they may feel that their health-professional is not taking them seriously and, therefore, feel rejected. As a result, they are likely to consult with many health-professionals, and experience ineffective treatment and prolonged pain. Those with a fearful attachment style are also likely to delay seeking health-professional help until they are desperate. When they do eventually seek help, their communication is likely to take the form of hopelessness and helplessness. This is likely to elicit frustration from health-professionals. The needs of the fearfully attached person may feel overwhelming to the health-professional. Therefore their emphasis is likely to be on the psychological, rather than physical, symptoms. Because of their working models, thoughts, and behaviours, the fearfully attached person is unlikely to benefit from treatment. They may go through a process of many referrals, often feeling rejected when referred.

While this model for the affect of attachment on chronic pain is theoretical, research does support this model of increased pain, and especially, likelihood of chronic pain, with insecure attachment styles (Feeney & Ryan, 1994; Mikulincer & Florian, 1998). Feeney and Ryan (1994) reported research on attachment styles and health-professional treatment-seeking. They found avoidantly attached people were reluctant to seek health-professional treatment. This is consistent with Mikail, *et al.*'s (1994) suggestions. Participants in this current study described many of the indications for fearfully attached individuals' reactions to pain as reported by Mikail *et al.* (1994). Particularly, they often delayed seeking treatment for their acute pain. When they did seek help, they struggled to communicate their difficulties to health-professionals, often feeling misunderstood. They stated that the health-professionals they consulted thought their pain was psychosomatic or psychological. Their implicit theories were often different from those of their treating health-professional. As a result, they did not follow the treatment suggested. They saw many health-professionals and often felt rejected by them.

Mikulincer and Florian (1998) studied the effect of attachment style on chronic pain patients. They found that attachment style contributed to the appraisal of, and ability to cope with, pain. Securely attached people appraised their pain as less threatening, believing that they were able to manage it. They used more problem-focused strategies and less emotion-focused strategies than insecurely attached people. Even when suffering from pain, securely attached people showed better mental health than insecurely attached people. Other researchers have also reported positive associations between beliefs about efficacy of managing pain, use of active coping strategies, and psychological and physical functioning (eg., Jensen, Turner, & Romano, 1991b). This current study found that the implicit theories held by the participants had a significant impact on the management of their pain. The participants frequently used emotion-focussed strategies and reported that they were unable to manage their pain. Possibly as a result of this, many of the participants had disability and negative mental health effects associated with their chronic pain. This is typical of insecurely attached individuals.

Illness-onset and symptoms of illness have been related to social insecurity, social environment, and

perceived inadequate social support. Insecure attachment is also highly associated with illness symptom reporting (Feeney & Ryan, 1994; Hazen & Shaver, 1990). Negative emotionality, which is related to distress, and thus attachment style, is correlated with subjective health complaints and reporting of symptoms, but unrelated to objective evidence of disease (Feeney & Ryan, 1994). This negative emotionality could be related to Gray's (1985) over-active behavioural inhibition system, which Kagan (1989) also discusses. In this case, negative emotionality may be associated with hypervigilant attention to threatening information, thus explaining high symptom reports. As Feeney and Ryan (1994) state: "further investigation of the link between avoidant attachment and health care is clearly warranted, because there are important medical implications of delayed help seeking" (p. 343). Important implications of delayed treatment-seeking and treatment compliance were also found in the present study. Additionally, negative emotionality and distress were related to symptoms of chronic pain and other related difficulties. This appeared to be intricately related to attachment style, as is suggested by the above authors.

There is partial support for a link between illness in the family and insecure attachment, especially with frequent paternal illness. However, family illness is not found to be associated with symptom report (Feeney & Ryan, 1994). Despite this, chronic illness in a person's family is related to health-professional visits. This is consistent with the theory of modelling (Feeney & Ryan, 1994). Hospitalisation during school years is also likely to predispose a person to chronic pain (Pilowsky, 1982). These family and developmental concepts were evident in the current study. There was much illness in the participants' families and a predominance of fearful attachment. The participants spoke about learning some pain-behaviours from their families and applying these to their own chronic pain.

In summary, several groups of researchers have theoretically discussed, and empirically examined, the role that attachment style plays in the development of chronic pain. Like the present study, they found that attachment style affects treatment-seeking behaviour, compliance with treatment advice, implicit theories about chronic pain, management and coping with chronic pain, including the strategies used, and also that this may be familial. This family connection is likely to be behaviourally learned through modelling. However, it could also be linked to physiological systems, which may be more genetically-based, such as the behavioural inhibition system.

SUMMARY OF ATTACHMENT

The participants in this study appeared to share many characteristics of fearfully attached individuals, and could be described as being fearfully attached. Researchers discuss attachment style as affecting many of the issues also discussed in this study, including affect regulation, employment, relationships and well-being, in addition to responses to health, illness, pain, and chronic pain. Attachment style has been demonstrated to affect how a person responds interpersonally, to their environment, and to distressing situations, including chronic pain. It is likely that a person's attachment style influences how he or she responds to pain, chronic pain, and its management. It therefore influences the outcome of these experiences.

4.1.3.2 Personality

Personality is related in many ways to attachment style. Personality can be seen as a person's way of interacting with others and regulating themselves. All participants in the present study did, in the past, and at the time of interview, report difficulties interacting with others. Many had poor or maladaptive interpersonal, affect regulation, and coping skills. Most lacked closeness to others, and/or became overly dependent on others and feared abandonment. Regularly, their ways of interacting were very rigid and they often had dichotomous ways of viewing the world.

These are all traits of personality that can cause difficulties, and are discussed in the Diagnostic and Statistical Manual of Mental Disorders: Fourth Edition (DSM-IV) (American Psychiatric Association, 1994). This manual states that "a personality disorder is an enduring pattern of inner experience and behaviour that deviates markedly from the expectations of the individual's culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment" (p. 629). Dysfunctional personality traits affect cognition, emotion, interpersonal function, or self-regulation (American Psychiatric Association, 1994). The DSM-IV (American Psychiatric Association, 1994) views personality disorders as falling into distinct categories, which are grouped into three clusters. Cluster A is the odd, eccentric cluster and includes paranoid, schizoid, and schizotypal personality disorders. Cluster B is the dramatic, emotional, or erratic cluster and includes antisocial, borderline, histrionic, and narcissistic personality disorders. Cluster C is the anxious, fearful cluster and includes avoidant, dependent, and obsessive-compulsive personality disorders.

Personality can also be viewed as existing on a continuum with no clear distinction between the presence and absence of disorder (Widiger, 1993). The DSM-IV also discusses personality traits in a dimensional sense (American Psychiatric Association, 1994). Using this dimensional concept, personality traits only become disorders when they become rigid and inflexible or maladaptive, and cause dysfunction or distress (Widiger, 1993). The DSM-IV fails to provide meaningful thresholds for personality traits versus disorders (American Psychiatric Association, 1994). The frequency of multiple diagnoses supports the argument for a dimensional rather than categorical system (Widiger, 1993). Personality disorders also need to be assessed relative to a person's personal, social, cultural, and work environments (American Psychiatric Association, 1994; Widiger, 1993).

The findings of research into personality disorders related to patients with chronic pain have been inconsistent. Some studies find a positive relationship between chronic pain and hypochondriasis, hysteria, and depression (eg., Engel, 1959; Pilowsky & Spence, 1976). Other authors suggest that this may be because chronic pain patients have a somatic focus and that this is what is being measured (Weisberg, Vittengl, Clark, Gatchel, & Gorin, 2000). Many pain patients respond to somatic questions on personality scales differently from pain-free people and similarly to somatisers. This may be the result of the questions asked rather than the personality characteristics of chronic pain patients. The questions may relate directly to chronic pain and its associated difficulties, particularly physical difficulties. Chronic pain has been found to change people's body consciousness (Sherman, Sherman, & Bruno, 1987). This may also affect the way that they respond to self-report questionnaires of the type usually used in assessing personality. This may or may not represent a change in personality

structure. Other research has shown no difference in personality between those with and without chronic pain (eg., Turk, 1996b). If there is a difference in personality functioning between people with and without chronic pain, it is important to understand how this might affect the chronic pain patient. Linder, Poston II, Haddock, Foreyt, and Ericsson (2000) found that neither baseline personality traits nor psychopathology were useful predictors of disability status in pain patients. Psychological factors have also failed to differentiate which patients will respond to specific treatments (Love & Peck, 1987). The premorbid personality of chronic pain patients has not been extensively studied (Merskey, 1982a). Most research focuses on chronic pain patients after the onset of their chronic pain. As such, it is unclear whether specific types of personality functioning may cause a vulnerability to develop chronic pain or whether they are a consequence of experiencing chronic pain. Moreover, whether there actually is a difference in personality functioning in chronic pain patients is unclear.

There is increasing evidence suggesting that it is the acute episode of pain, or the fact that the person is in chronic pain, together with its consequences, that accounts for the psychopathology often found in chronic pain patients (Weisberg *et al.*, 2000; Woodforde & Merskey, 1972). Turk (1996b) suggests that “on the basis of their prior experiences, people develop idiosyncratic ways of interpreting information and coping with stress. There is no question that these unique patterns will have an effect on their perceptions of and responses to the presence of pain” (p. 21). Therefore, personality traits in chronic pain patients may be a measure of illness and suffering rather than reflecting long-term personality types (Robinson, Greene, & Geisser, 1993). This suggests that the responses shown by many chronic pain patients are due to the stresses of managing chronic pain, rather than their underlying personality traits.

Pathology, distressed personality profiles, and personality disorders have been found to be more common among chronic pain patients by several researchers (eg., Bass & Murphy, 1995; Robinson *et al.*, 1993; Schnurr, Brooke, & Rollman, 1990; Sternbach, Wolf, Murphy, & Akesson, 1973; Weisberg *et al.*, 2000). It may be that these disturbances are found in higher numbers among chronic pain patients than people with chronic pain who are not patients. For example, irritable bowel syndrome patients had a higher number of abnormal personality patterns and greater illness-behaviour than irritable bowel syndrome non-patients or normal controls (Drossman, McKee, Sander, Mitchell, Cramer, Lowman, & Burger, 1988). People may exist on a continuum ranging from regularly under-reporting symptoms to hypochondriasis. The reporting of symptoms is probably a stable personality characteristic (Costa Jr. & McCrae, 1985).

A diathesis-stress model of personality disorders in chronic pain has been suggested to explain the increased rate of personality disorders in chronic pain patients. It proposes that personality disorders in chronic pain patients develop both because the person’s underlying personality predispositions and because of the stressful situation caused by chronic pain and its consequences (Weisberg *et al.*, 2000). The diathesis-stress model can account for an increased rate of personality disorders by suggesting that these traits, which are normally controlled, become exacerbated by the stress of pain and its consequences, and when this is poorly managed a personality disorder may result (Weisberg *et al.*, 2000).

Love and Peck (1987) profiled different psychological responses to chronic pain. They found that people with different psychological responses exhibited different pain-related behaviours, and that they may also show a differential response to treatment. Treatment for chronic pain is more likely to be successful when it takes into account personality differences in treatment planning (Weisberg *et al.*, 2000). This clearly needs further research to ensure the effectiveness of treatment for chronic pain.

In summary, the research findings are, as yet, unclear whether people suffering from chronic pain have a different personality functioning than the general population. It is also unclear as to whether this difference also applies to those people who have chronic pain, but who are not patients receiving intervention. It is likely that some chronic pain populations have personality functioning that is different from the general population. This may be unhelpful to their chronic pain management. Perhaps the most important issue is how are people, with different personality functioning, best helped by different management strategies for their chronic pain? There is very little research, to date, on this question. What is even less clear is whether these personality functioning differences, if they exist, are present prior to the onset of chronic pain, or whether they are as a result of the chronic pain experience, and are therefore possibly less stable. The determination of the primacy of personality functioning versus chronic pain requires prospective (rather than retrospective) research, which is uncommon in this area of study. If unhelpful personality functioning was present prior to the development of chronic pain it may be instrumental, as a vulnerability factor, to the development of chronic pain. Regardless of the order of the emergence of these two difficulties, it is likely that dysfunctional personality characteristics would help maintain chronic pain. Thus, management of chronic pain needs to be tailored to the differing needs of individual chronic pain patients.

The participants of this current study seemed to have rigid ways of interacting with others and the world. It appeared from their retrospective description of their background that this may have been an exacerbation of their original personality traits, in line with the diathesis stress model. Thus, personality functioning may act as both a vulnerability and a maintaining factor for chronic pain and disability in the participants of this study. However, this needs to be further explored using prospective studies. This lack of clarity with regards to the relationship between personality and the development of chronic pain and disability was further restricted as the participants' experiences were not being formally tested by a personality functioning assessment tool, but rather by examination of descriptions of thought, emotion, behaviour, and interaction.

4.1.3.3 Relationships

Interpersonal relationships provide one expression of attachment styles and personality traits. Most of the participants in this current study reported difficulties with isolation, interpersonal skills, conflict resolution, and social competence in general. Additionally, they experienced difficulties with these issues in their social and intimate relationships. The participants described these difficulties as being present from an early age in their childhood, and also in their adulthood, both before and after they developed chronic pain. The attachment literature, previously reviewed, discusses relationship issues

in childhood and adulthood in general. Additional chronic pain literature discusses relationship issues, and particularly social support, as it pertains to chronic pain. This will be discussed below.

Relationships and chronic pain interact and affect each other in a number of ways. The beliefs people hold are partially determined by their social networks, which are people that they interact with. Their networks are determined by their attitudes towards their networks and how they use them. Their beliefs determine their behaviour. Thus, beliefs and relationships are constantly interacting, creating cyclical feedback. If people have positive expectations of their social relationships they will interact positively within them, thus strengthening their relationships and the positive beliefs they have of them. Further, they will use these social relationships in times of crisis. The opposite is true for people who think their social relationships are unsupportive, for this negative feedback loop reinforces their negative view of their relationships (Tolsdorf, 1976).

Chronic pain can be seen as a time of crisis, or at least of stress and distress, and thus relationships have an important function. A cycle of support and increasing intimacy, or lack of support and increasing isolation can be created. The latter describes the environment reported by the participants in the present study. The small number of relationships that were described as being present prior to the onset of chronic pain decreased in number and intimacy. The participants' attitude towards significant others was one of distrust and perceived lack of support. They reported acting in ways that confirmed their expectations of rejection.

Relationships are closely related to attachment. Adult attachment can be seen as an attempt to regulate affect in the context of close relationships. Fearfully attached people do this by inhibiting expression of negative affect. However, they are likely to experience considerable negative affect because of their negative view of themselves and others and their low self-confidence. Socialising is related to higher self-esteem (Hirsch, 1980). Fearfully attached people report much reduced socialising, low self-esteem and self-confidence, and also have low confidence in others. Their interaction style does not offer the protection against adverse life-events that a supportive intimate relationship might. As a consequence, this interaction style confirms their negative views of themselves and others by allowing no disconfirming evidence (Bartholomew, 1990). This was apparent with the participants in the present study. They described a lack of happiness and sense of meaning in their lives. Consistent with relationships of fearfully attached individuals, the participants of this study struggled to appropriately express their affect, particularly negative affect. They also held negative views of themselves, others, and of interpersonal interaction. They lacked confidence that a positive resolution would be reached. They experienced many adverse life-events for which their poor skills were insufficient to manage, as they did not enlist social support or support from their intimate relationships. All of the participants had difficulties with their intimate relationships, most experiencing separation from their partners.

Avoidantly attached people are less likely to provide support to others. Relationships that have little support often become dysfunctional or disturbed. They may remain superficial if there is little stress, or be damaged because of the avoidant person's inability to provide support and comfort during difficult times (Rholes *et al.*, 1998). Because of internal working models that generate negative evaluations, relationship satisfaction may be related more to what people perceive than what is actu-

ally happening (Rholes *et al.*, 1998). Indeed, the participants involved in the present study held very negative expectations of relationships and relationship satisfaction, and reported little relationship satisfaction. Their descriptions were consistent with the research findings of Rholes *et al.* (1998) that relationships appeared superficial prior to the onset of chronic pain, and with the stress of chronic pain and its consequences, the relationships became increasingly dysfunctional leading to breakdown. The participants in the present study reported offering little or no support to their partners in what was the enormous change to their relationship and the lives of their partners, brought about by their chronic pain. Often the participants reported not knowing that their partners were unhappy, and therefore did not offer any support.

Chronic pain patients whose spouses were not solicitous regarding their pain-behaviour, reported lower pain-levels with their spouse than with a neutral person. Patients who reported a positive response to their pain-behaviour by their spouses reported higher levels of pain when their spouses were present (Block *et al.*, 1980). Thus, chronic pain-behaviour is affected by the behaviour of others. The participants in the present study often described positive responses to pain-behaviours by their partners. It is likely that this led to increased levels of pain-behaviours. A small number of participants reported increasing their pain-behaviours to increase the support of others.

In summary, published research provides theoretical and empirical information illustrating how relationships are affected by, and in turn affect, chronic pain. This was clearly evidenced in this current study with the participants describing many relationship difficulties. The interaction between chronic pain and relationships appears to be consistent with the other constructs discussed above, particularly attachment style and personality traits. Chronic pain behaviour and relationships appear to interact in a complex and bi-directional fashion. The process behind this may be the role of beliefs in influencing both of these constructs. Relationships are also intricately related to affect regulation. The participants of this study struggled with both affect regulation and supportive relationships. They were unlikely to elicit support from significant others, due to their fear of rejection and expectations of a lack of support. They were also unlikely to support their significant others during times of their partners' distress and need. This often led to relationship breakdown. The participants described much isolation and loneliness as a result of their relationship difficulties. Some of these ideas are further explored in the following section on social support.

4.1.3.4 Social Support

Participants in this study generally perceived low social support with which they were typically dissatisfied. Much of the social support described by the participants may have been unhelpful in assisting them to manage their chronic pain functionally. This was because much of their social support reinforced maladaptive thoughts and behaviours. When the social support reinforced adaptive behaviours, the participants experienced increased functional outcomes. These findings were consistent with the literature examining social support, which is summarised below.

Social interactions play a very important role in the regulation of emotional and biological systems throughout life (Hofer, 1984). Deficiencies in social relationships have been found to account for

neurotic symptoms under adversity (Henderson, 1981). The positive contribution of social support is related to the fact that social support buffers stressful events. This happens when the person perceives that their network can provide assistance if needed (Cohen & Wills, 1985; Wethington & Kessler, 1986). Effective social support involves everyday activities, sharing tasks, feelings, affection and friendship, and exchanging information (Vaux, 1988). Support that is provided within a conflicted relationship may not have positive effects (Sarason, Pierce, & Sarason, 1990). While social support can help people manage adverse or stressful situations, its effect is related to the person's perception that the support will provide assistance. The participants in the present study did not expect their social supports to provide them with assistance. They also did not resolve conflict and many of their relationships had disintegrated, leaving them isolated. Loneliness and isolation have been found to be risk factors for psychological and physical disorders (Bartholomew, 1990). Indeed, this appeared to be the case with the participants in the current study.

People can be linked to their social environment by community, social network, and intimate relationships (Vaux, 1988). Social support takes many forms and serves many functions. These include: instrumental functions, including possessions or money, suggestions and advice; affective functions such as self-esteem, identity, love, affection, belonging, and companionship; emotional support; feedback; social reinforcement; and socialising (Vaux, 1988). Social support can also be seen as a complex transactional process including an active interaction between the person and their support network. A person needs to develop and sustain support networks, actively seek assistance from them, and manage the situations so that they meet their needs (Vaux, 1988). Education and income level are positively related to social support usage (Eckenrode, 1983). The participants in the present study did not develop or sustain their social support networks and therefore they did not gain the benefit of these.

Support for major life-changes has been found to be useful for positive adaptation (Hirsch, 1980). However, adverse reactions to stress are most commonly researched in extreme situations, in addition, the categories in which life-events are placed vary with research context. Therefore, in research it may be useful to examine the meaning of the events for each individual (Dohrenwend, Link, Kern, Shrout, & Markowitz, 1987). Chronic pain, while it may result from an extreme situation, is ongoing and pain-sufferers are often expected to function normally and maintain their "normal" lifestyle. Therefore, the chronic pain patient's social support reactions may be different from those studied in extreme situations. Despite this, the participants in the present study displayed many of the issues reported in research for people who have little social support and perceive that they have few positive social interactions in adverse situations.

THEORIES OF SOCIAL SUPPORT

There are several theories of social support. Kaplan and Toshima (1990) discuss the functional effects model that identifies different positive and negative aspects of social support. It is used to organise other theories. The other theories include mainly negative functional effects and comprise of the transactional approach, the systems approach, including the family system and family stress theories,

and the behavioural approach. Positive functional effects are also discussed (Kaplan & Toshima, 1990; Kerns & Weiss, 1994). The positive functional effects theoretical stance describes pain as stress. As a result, cognitive factors that help people cope with stress are thought to be helpful in coping with chronic pain. The theory emphasises that social supports can have positive effects on health, but only if they reinforce appropriate health-behaviours (Kaplan & Toshima, 1990). Many follow-up studies suggest that social support is important in treatment for long-term effectiveness (Kaplan & Toshima, 1990).

The participants in this study described social support having positive effects on their pain management when their support person (primarily their partner) reinforced appropriate management behaviours. Social support was seen as being negative when it reinforced pain-behaviours that were not associated with appropriate and positive management of chronic pain. This finding could fit with many of the theories outlined above.

PERCEIVED SOCIAL SUPPORT

It is not the lack of relationships, but rather the perceived lack of relationships, which has been found to be important in adjustment to stressful life-events (Henderson, 1981; Wethington & Kessler, 1986). The influence of actual support is mediated by perceived support (Wethington & Kessler, 1986). Perceived social support has been found to be stable over time, even during times of transition and environmental instability (Sarason *et al.*, 1990). People with a high-level of perceived social support have a wider range of social skills than those with a low-level of perceived social support (Sarason *et al.*, 1990). While social skills do not specifically seem to be different in those with high and low perceived social support, the general affective response is usually different, including the general impression of competence (Sarason *et al.*, 1990). Ironically, people who have a high level of perceived social support do not usually receive this support because others see them managing in stressful situations and therefore do not offer them support (Sarason *et al.*, 1990). Perceptions of support are positively related to perception of others (Sarason, Pierce, Shearin, Sarason, Waltz, & Poppe, 1991). Perceptions of social support are also related to self-perceptions, beliefs about the views of others, and to the actual views of others (Sarason *et al.*, 1991). The participants in the present study reported having low social skills and low perceived social support.

People with low perceived social support report more cognitive interference, for example, worrying or interfering thoughts. This is consistent with the increased anxiety displayed by insecurely attached people (Sarason *et al.*, 1990). People with differing perceived social support differ in self-image and how they believe that others see them. People with high perceived social support describe themselves, and believe that others see them, more positively and less negatively than those with low perceived social support. This has been found to be true when triangulated with information from significant others. As a result, self-image is partially related to how others see the person (Sarason *et al.*, 1990). This was not explored in the present study, as significant others were not interviewed. However, the participants reported worrying, which included worrying about relationships, and many described symptoms of anxiety. They also reported viewing themselves and others negatively, and that they

thought that others saw them negatively.

INFLUENCE OF ATTACHMENT STYLES ON SOCIAL SUPPORT

Perceived social support might be a consequence of attachment working models of self and others that were developed early in life (Sarason *et al.*, 1990). Early attachment styles lead to persistent schemas or working models, which are used to evaluate future relationships and feelings of self-worth, self-efficacy, and intimacy. These attachment styles influence relationships (Sarason *et al.*, 1990; Wallace & Vaux, 1993). Those with a secure attachment style reported more positive social networks than those with insecure attachment styles (Wallace & Vaux, 1993). Attachment styles may influence a person's choice of partners and supportive people based on their mental models, even if this may not be optimal for the person (Sarason *et al.*, 1990).

Attachment theory predicts that securely attached people will cope more effectively (Sarason *et al.*, 1990). Securely attached people spend increased time in exploratory activities, gaining more information, making interpersonal contacts, observing coping behaviour, and learning interactive skills. These skills, in turn, increase the person's self-confidence and feelings of self-efficacy. In addition, a securely attached person will not worry about rejection from others. As a result, if they should happen to fail, they are likely to try to cope with the situation and use a task- or problem-focused coping strategy. Securely attached people feel secure and free to explore their environment and therefore acquire cognitive and social skills to deal with future challenges (Sarason *et al.*, 1990).

This is a very different description from that given by the participants of the present study. They described negative social interactions. They often struggled to interact effectively. They struggled with coping and spent much time avoiding activities and other people. They had low self-confidence and self-efficacy and regularly sought the approval of others, at the same time invariably fearing rejection. They usually did not use effective problem-solving skills and did not think that they could manage future challenges.

SOCIAL SUPPORT AND FUNCTIONAL OUTCOME

Social support is related to general outcome and functioning in a wide range of situations (Hobfoll, Nadler, & Leiberman, 1986). Greater intimacy is related to greater satisfaction with support during a crisis. This has been found to be independent of self-esteem and social network factors (Hobfoll *et al.*, 1986). Support satisfaction has a direct stress-buffering effect of reducing psychological symptoms (Sandler & Barrera Jr., 1984). In the present study it is likely that the management of chronic pain and its consequences would be assisted by high perceived levels of social support and visa versa. As a result, it is likely that the participants experienced better outcomes from this management, however, most participants did not effectively use social support.

SUMMARY OF SOCIAL SUPPORT

Social interaction is particularly important in emotional regulation, and it is especially related to adaptively managing stress. It is also related to a person's attachment style. However, it is perceived

social support that is important, not the reality of actual social support. Perceived social support appears to be relatively stable over time and related to a number of other constructs including beliefs, level of anxiety, and the person's image of themselves and others. Social support can have both positive and negative effects. The participants in this study described few social supports. They were particularly unsatisfied with their perceived level of social support. They showed many constructs associated with a lack of perceived social support.

4.1.3.5 Communication

The ability to communicate is important in both social and intimate relationships. The participants of this study often talked about, and gave examples of, their difficulty in communicating. In particular, they reported difficulties expressing emotions and communicating about topics that were important to them. Research exists addressing communication difficulties (eg., Cantwell & Baker, 1980). However, this is almost entirely aimed at addressing speech and language difficulties. Communication disorders have been shown to have an impact on psychiatric disorders and difficulties at school (Cantwell & Baker, 1980). This finding was consistent with the present research, although the areas of study are different. Communication is discussed in some detail in section 4.2.3.2 on health-professional communication.

4.1.3.6 Somatisation

The participants in the current study had difficulty expressing themselves verbally, especially regarding their emotions. Many expressed what was happening somatically. The definition of somatisation includes numerous self-reported physical symptoms, and excessive health-care seeking (Dworkin, 1994). This may be due to a lowered perceptual threshold for noticing symptoms and bringing them to the attention of others, misinterpretation of these symptoms, or a psychiatric disturbance (Dworkin, 1994). Recurrent pain is the most common somatic symptom reported (Dworkin, 1994). True somatisation disorder, as classified by the DSM-III-R and DSM-IV, is rare, effecting from 0.2% - 2.0% of the population, although a spectrum of severity for somatisation may exist (American Psychiatric Association, 1994; Dworkin, 1994). Somatisation disorder includes pain symptoms, which are not fully explained by other means (American Psychiatric Association, 1994). Somatisation has been reported to be strongly negatively related to adjustment to chronic pain (Rosenstiel & Keefe, 1983).

4.1.3.7 School Refusal

School refusal is related to somatisation, and may be a physical expression of emotional disturbance. It is interesting that nearly all of the participants in this study reported school refusal difficulties. Many of them clearly identified this as a difficulty in communicating their feelings, needs, and desires. Extensive literature exists regarding school refusal. Much of it relates to other factors identified in this present study, particularly somatisation, psychological difficulties, social, family and relationship issues, and employment factors. These factors, related to school refusal, are discussed below.

TYPES OF SCHOOL REFUSAL

In most research, the terms “school phobia” and “school refusal” were used interchangeably; some researchers explicitly stated this fact (eg., Atkinson, Quarrington, & Cyr, 1985; Berg, 1981; Nichols & Berg, 1970). As a result, the term “school refusal” will be used in the following discussion. The term “school phobia” is used to indicate a phobia of school, rather than school refusal in general.

There are various degrees of school refusal (De Aldaz, Vivas, Gelfand, & Feldman, 1984). School refusal often involves more than a simple phobia of school (Nichols & Berg, 1970). School refusers are defined as having an extreme difficulty going to school, involving refusal or severe emotional reactions upon attending, and remaining at home with the knowledge of their parents. They do not exhibit antisocial behaviours (Berg, Butler, Franklin, Hayes, Lucas, & Sims, 1993; Nichols & Berg, 1970). School refusal has also been defined as “absenteeism from school and difficulty going to or staying in school” (Kearney & Silverman, 1993, p. 85), or “by a reluctance to attend school associated with neurotic features and sometimes physical symptoms which appear to be manifestations of emotional upset” (Bools, Foster, Brown, & Berg, 1990, p. 171). Some children experience extreme anxiety when attending school and try to reduce their anxiety by not going to school. Their academic and social progress suffer as a consequence (De Aldaz *et al.*, 1984). Truancy is different, this occurs when the child conceals not going to school (Berg *et al.*, 1993). Truants tend to have conduct disorders, increased antisocial behaviour, and avoid their homes and parents as well as their schools (De Aldaz *et al.*, 1984). Truants tend to be absent for short periods of time, and school refusers for longer periods (Atkinson *et al.*, 1985). Most of the participants in the current study suffered from school refusal rather than truancy. Most experienced anxiety, consistent with school refusal, but did not exhibit antisocial behaviours, which may have been consistent with truancy.

School refusal has sometimes been described as a variant of other difficulties, rather than a condition in its own right. It has been said to be part of an affective disorder or an anxiety disorder, particularly separation anxiety (Berg *et al.*, 1993; Bools *et al.*, 1990; Eisenberg, 1958; Hersov, 1960; Kearney & Silverman, 1993). Separation anxiety occurs when a child and mother feel compelled to be in close physical proximity to each other. It is not primarily a fear of school (Estes, Haylett, & Johnson, 1956). Truancy is sometimes described as a symptom of conduct disorder (Berg *et al.*, 1993; Kearney & Silverman, 1993).

School refusal is often separated into types such as acute and chronic, neurotic or characterological, or type I and type II (Atkinson *et al.*, 1985; Baker & Wills, 1978; Kennedy, 1965). These seem to be different labels for the same constructs. Type I school refusal is described as a neurotic crisis and type II as a way of life (Kennedy, 1965). Neurotic onset is usually an abrupt and isolated symptom. At home, children with neurotic school refusal become stubborn, tense, and clingy, but their social and intellectual functioning progresses normally. By contrast, characterological school refusers are more disturbed and their fear of school is one of their many difficulties. They are often mistrusting, hypersensitive, and depressed. Their restricted lives revolve around their households. Their parents have a higher chance of being emotionally disturbed and mentally ill (Atkinson *et al.*, 1985; Coolidge, Hahn, & Peck, 1957). Other researchers have also divided school refusal into different types. Different pa-

rameters have been suggested for distinguishing between the school refuser types. These include: extensiveness of disturbance, one type is specific to school, the second is more general; mode of onset, acute or chronic; source of fear, separation, failure, or school; age; gender; and presence of depression (Atkinson, Quarrington, Cyr, & Atkinson, 1989). The participants in the present study appeared to have a specific crisis type of school refusal with few of the other reported difficulties.

Last and Strauss (1990) found three sub-groups of school refusal; separation anxious, socially phobic, and simple phobic. The separation anxiety group exhibits problems that are related to the mother-child relationship. The two phobic groups tend to have problems that are more specific to the school environment, academia, or social relationships (Last & Strauss, 1990). De Aldaz, *et al.*'s (1987) alternative way of categorising school refusal involves three categories; adjustment reaction, school phobia, and emotional disturbance. The adjustment reaction was particularly related to adaptation to changes in the school environment. These children were dependent and demonstrated separation anxiety. Those in the school phobia category had a fear of aspects of school, particularly related to fear of the teacher or achievement. An emotional disturbance included obsessional or affective difficulties. These children with an emotional disturbance categorisation of school refusal often had emotionally disordered parents. Those with separation anxiety have been found to be younger or have previous school refusal (Last, Francis, Hersen, Kazdin, & Strauss, 1987; Smith, 1970). The participants in the present study appeared to have difficulties consistent with the separation anxiety or adjustment reaction categories of school refusal.

Several predisposing factors for school refusal have been found, and include general fearfulness, separation anxiety, perfectionism, fear of failure, and manipulation (Atkinson *et al.*, 1989; Smith, 1970). Those that are perfectionistic and fear failure tend to dominate their parents and display an inflated sense of self-esteem. When school is threatening, school refusing children may retreat into an area in which they know they are competent; this is often their home (Atkinson *et al.*, 1989).

There is some debate pertaining to the academic impact of school refusal and the academic ability of school refusers. It is generally thought that the standard of academic work and behaviour at school of school refusers is good and that they have normal intellectual functioning (Hersov, 1960; Smith, 1970; Nichols & Berg, 1970). However, some researchers have found that school refusal is often associated with poor academic performance and with possible failure (Last & Strauss, 1990). The type of children in the group studied may determine this. For example, children with acute school refusal have been found to be more intelligent than children with chronic school refusal (Berg, Nicholas, & Pritchard, 1969). It is commonly found that school refusers change schools more often (De Aldaz *et al.*, 1984). However, it appears that the school itself does not have much effect on school refusal (Berg, 1992). The participants in the present study reported positive academic progress, consistent with acute school refusal.

In summary, the participants in this study tended to be perfectionistic and feared failure. They also reported difficulties with social relationships. They generally reported high academic achievement and good behaviour at school, although many refused to attend school. They generally fell into categories of acute school refusal or that associated with perfectionism or separation anxiety.

PREVALENCE OF SCHOOL REFUSAL

In the present study, nearly all participants reported symptoms consistent with school refusal. This appears to be a substantially higher rate of school refusal than in the general population. However, due to the methodological restrictions of this study, statistical conclusions could not be drawn.

The prevalence rates of school refusal in the literature depend on the definition of school refusal used. In a study by De Aldaz *et al.* (1984) 18% of children discussed intense fears of school, although only 0.4 % met criteria for school refusal based on stringent criteria of reports from the child, teachers, and parents. Given these strict conditions, school refusal is a rare condition (Atkinson *et al.*, 1989; Berg, 1992). Prevalence rates have been found to range from one to eight percent (Berg *et al.*, 1993; De Aldaz *et al.*, 1987; Kearney & Silverman, 1993, 1995; Kennedy, 1965; Last & Strauss, 1990; Smith, 1970). School refusal has been found to be both more and less prevalent than truancy (Berg, 1981; De Aldaz *et al.*, 1987; Galloway, 1983). Between one and ten percent of children can be found to be truanting from school (Berg, 1981, 1992). Absence from school is increasing; in England it has been found to increase from two percent in 1982/3 to eight percent in 1987/8 (Berg, 1992). Nearly all of the participants in this current study are likely to have met criteria for school refusal, based on their own self-reported behaviour. This is a much higher level than predicted by the general population. It is possible that some of the factors predisposing the participants to develop school refusal also increased their vulnerability to develop chronic pain.

There is a high incidence of depression and anxiety in school refusers. They also have other emotional and behavioural problems (Berg *et al.*, 1993; Bernstein & Garfinkel, 1986, 1988; Bools *et al.*, 1990; Warren, 1960). Social maladjustment was common (McGhee & Short, 1991). These difficulties were shown among the participants in the present study, particularly depression and social isolation.

In addition to children with school refusal having psychological difficulties, their parents and families also have high rates of psychological difficulties. Parents and siblings have been found to have significantly higher rates of anxiety and depression (Berg *et al.*, 1993; Bernstein & Garfinkel, 1988; Galloway, 1983). Many parents of school refusers are reported as having alcohol or drug difficulties (Bernstein & Garfinkel, 1988). A high rate of both mothers and fathers of school refusers are treated for psychiatric illnesses (Bools *et al.*, 1990). The parents of school refusers are reported to have a high incidence of chronic physical illness (Bools *et al.*, 1990; Galloway, 1983). In the present study, the families of the participants were reported to have particularly high levels of alcohol and affect regulation difficulties and chronic illnesses.

The family situation is reported to be the main determinant of school refusal (Berg *et al.*, 1993). Families have been shown to have more disturbance, particularly in dependency, conflict resolution, communication, affect expression, control, and rigidity (Bernstein & Garfinkel, 1988). Some form of separation is common amongst the families of school refusers (Bools *et al.*, 1990; Last & Strauss, 1990). Some school refusers lose parents through death (Galloway, 1983). School refusal can be predicted by depression, dependency, level of fear, frequent changes in schools, and a family history of school refusal (De Aldaz *et al.*, 1987; Last & Strauss, 1990). Consistent with this research, the participants in the present study had many difficulties in their families of origin and often their parents were

physically or functionally absent. School refusal was extremely prevalent amongst the participants.

THEORIES OF SCHOOL REFUSAL

Theories of school refusal include those focusing on perfectionism and fear of failure, family relationships, separation anxiety, and the child's vulnerabilities, including learning factors (Atkinson *et al.*, 1985; Berg, 1992; Berg *et al.*, 1969; De Aldaz *et al.*, 1987; Hersov, 1960; Kearney & Silverman, 1995; Kennedy, 1965; Leventhal & Sills, 1964; Nichols & Berg, 1970; Radin, 1967).

Although this current study could not determine any causative relationship between the participants' school refusal and their family background, some of these theories appeared to be supported by the participants in this study. In particular, the participants of this study reported problematic family relationships, traits of perfectionism, fear of failure, anxiety, and depression.

IMPACT OF SCHOOL REFUSAL

The participants of this current study described several emotional and psychological difficulties that could have been related to school refusal. The most common of these was depression. Other difficulties included emotional regulation difficulties, anxiety, social isolation, and passivity, especially within their families. This is consistent with the school refusal literature, which is discussed below.

Children suffering from school refusal often show a variety of emotional and psychological difficulties. These include separation anxiety, panic, fear, social isolation, shyness, dependency, sadness, emotional distress, and depression (Berg, 1992; Berg *et al.*, 1993, 1969; Coolidge, Willer, Tessman, & Waldfogel, 1960; De Aldaz *et al.*, 1987; Huffington & Sevitt, 1989; Kearney & Silverman, 1993; Last & Strauss, 1990; Waldron Jr., Shrier, Stone, & Tobin, 1975). Despite this range of difficulties, some school refusers do not suffer from psychological difficulties, except for their school refusal (Berg *et al.*, 1993; Bools *et al.*, 1990). School refusers often appear passive, hopeless, and lacking in initiative within their families (Huffington & Sevitt, 1989). They are sometimes described as having regressed due to stress (Coolidge *et al.*, 1960). Children with school refusal are often found to have similar problems to agoraphobics, such as neurotic disturbance, staying at home excessively, and needing the support of family or close friends to enter certain situations (Berg, 1981). School refusal has been described as a symptom of a severe character disorder (Coolidge *et al.*, 1960).

School refusal is often associated with inadequate peer relationships, social impairment, and later employment problems (Last & Strauss, 1990). School refusers are often socially isolated, and tend to be maladjusted or unsettled (Berg *et al.*, 1969; De Aldaz *et al.*, 1987). Isolated children lack problem-solving skills (Richard & Dodge, 1982). School refusers are overdependent, less sociable, immature, and rely on their mothers for support in everyday activities. Despite this, they talk to their mothers less, leaving the school refusers with less opportunity to dispel their fears (Berg & McGuire, 1971). Consistent with these findings, the participants in the present study described many difficulties with social interaction, and employment difficulties that existed before the onset of their pain. They also reported problem-solving difficulties.

Social differences may exist between acute and chronic school refusal as described by Berg *et al.* (1969). Children with chronic school refusal showed more attachment to their mothers, and acted alone more. They also required less assistance with everyday activities than those with acute school refusal. The chronically school-refusing children spent more time with their mothers than the acutely school-refusing children. They were characterised by stronger attachment to a parent, were less attached to their peer group, and left their home less. They also had a higher preference for being with their parents, or a friend, and being on their own, than children with acute school refusal. Those with chronic difficulties may have an aversion to strangers. Children with chronic school refusal were reported to have higher adverse social adjustment than those with acute school refusal (Berg *et al.*, 1969).

In the present study, most of the participants presented with physical complaints in order to avoid attending school, particularly abdominal pain, vomiting, and headaches. This may have increased their vulnerability to future chronic pain because they received reinforcement for their pain-behaviours, which was a communication of their emotional distress. School refusal can be confused with physical illness as physical symptoms include anxiety, anorexia, nausea, vomiting, abdominal pain, headache, sleep disturbance, limb pain, and difficulty breathing (Berg, 1992; Bools *et al.*, 1990). De Aldaz *et al.* (1987) found that to avoid going to school about half of refusing children physically resisted, half wept and half presented with physical complaints. Multiple symptoms were common.

The participants in the present study mainly reported that their school refusal was initiated by affect regulation and communication difficulties. Often this was related to academic boredom or social difficulties with their peers at school, which they felt unable to manage. This is consistent with the literature. Acute school refusal commonly occurs in adolescence and is precipitated by stress (Baker & Wills, 1978; De Aldaz *et al.*, 1987). This often occurs following a change in school or class, at the beginning of the school year, when there are problems with or a change in teacher, or problems with other children (De Aldaz *et al.*, 1987; Hersov, 1960). Anxiety and depression may be adjustment reactions to a stressful situation at school or home, or time away from school due to a physical illness or an upsetting family event (Berg, 1992; Smith, 1970). Chronic school refusers are less likely to have obvious precipitating stimuli to their school refusal (Atkinson *et al.*, 1985). Onset of chronic school refusal is often gradual rather than sudden and precipitated by anxiety and somatic complaints (Hersov, 1960). Children usually complain of feeling ill, or report abdominal pain or headaches. While they have a similar number of medical complaints to other children, these complaints are used to justify absence from school in school-refusing children (Berg, 1992). Separation from home is the most common underlying factor and this is often expressed as concern for their mother's safety (Hersov, 1960). Their fear revolved around: something happening to their mother; the teacher, or their peers at school; failure, possibly due to perfectionistic standards; or the child could be generally fearful (Atkinson *et al.*, 1985).

Consistent with the literature, the participants in the present study described disrupted family situations, often with hostility and dependence. Again, consistent with other research, many of the participants came from disadvantaged homes. They reported frequent stressors with few examples

of adaptive coping strategies. Many of the participants in this study clearly identified their lack of adaptive coping strategies.

School refusal is affected by, and has a big impact on, the family. School refusal is often associated with family disruption (Last & Strauss, 1990). School-refusing children have significantly more family dysfunction, as rated by mothers, than children with a pure anxiety disorder (Bernstein, Svingen, & Garfinkel, 1990). Many of the families of school refusers have shown mutually hostile and dependent relationships, although school refusal seems to be dependent on characterological, in addition to family, difficulties (Waldron Jr. *et al.*, 1975). Understanding child-family interaction is essential to understand school refusal (Radin, 1967). There was almost universal family malfunction (Waldron Jr. *et al.*, 1975), although not all research shows family hostility and disruption. Unlike most researchers, Galloway (1983) found that there was a lack of tension in the families of school refusers. School refusers often came from materially disadvantaged homes. They often had external stressors and they most probably experienced few adaptive coping strategies modelled in their families (Berg *et al.*, 1993; De Aldaz *et al.*, 1987). School refusal is very disturbing to all concerned, including the child, parents, and school (Waldfoegel, Coolidge, & Hahn, 1957).

Investment maybe made by both the family and the child in maintaining the school refusal symptoms (Coolidge *et al.*, 1960). Families of school refusers have a high incidence of mental illness, commonly affective disorders (Baker & Wills, 1978; Berg *et al.*, 1969; Hersov, 1960). Parental pathology was almost universal (Waldron Jr. *et al.*, 1975). The mothers of school refusers are often passive, over protective, encourage dependency, and they often have not resolved their own dependency issues. They are often anxious and feel they are inadequate mothers (Waldfoegel *et al.*, 1957). Fathers are commonly passive and also feel inadequate (Atkinson *et al.*, 1985; Galloway, 1983; Hersov, 1960).

In summary, the participants of this study showed many of the difficulties other researchers have described as impacting on school refusal. No causative relationship could be determined because of the nature of this research. It is also possible that these difficulties were not a result of school refusal, but rather they may be causative, co-existing, or non-related. These difficulties included depression and anxiety, somatic complaints, social isolation and social interaction difficulties, non-assertiveness within their families, disrupted and disadvantaged families, mental health difficulties within their families, difficulties with problem solving, and poor coping strategies.

HEALTH AND ILLNESS AND SCHOOL REFUSAL

This current study identified somatic symptoms, depression, anxiety, and obviously chronic pain, as being common with school refusal, this is consistent with the school refusal literature. A relationship has been found to exist between somatisation and school refusal (Last, 1991). Children with somatic complaints are more likely to exhibit symptoms of school refusal than those without (Last, 1991). School-refusing children are significantly more likely to suffer from illness (75% compared to 15% of the normal controls). School refusers suffer greater impairment from their symptoms (Waldron, 1976). When compared to neurotic children, school-refusing children have higher dependency, they have a greater tendency to somatise, and they have increased difficulty completing secondary school

education (Waldron, 1976).

SUMMARY OF SCHOOL REFUSAL

Several types of school refusal have been identified and many theories attempt to explain why it exists. The participants in this study appeared to have a very high rate of school refusal compared to the general population. They tended to be perfectionistic, fear failure, and experience difficulties with social relationships. They generally reported high academic achievement and good behaviour at school. The participants in this study tended to have many of the precursors and associated difficulties that were reported in the research on people suffering from school refusal. These precursors were particularly related to their family, social, and mental health difficulties. In addition, physical and somatic difficulties were found both amongst the participants of this study, and in school-refusing populations. These difficulties included chronic difficulties such as chronic pain.

4.1.3.8 Affect Regulation

Affect regulation has also been shown to be empirically related to many of the other constructs found in this model. The most obvious of these is attachment theory. In turn, both affect regulation and attachment are related to other constructs, such as isolation, communication, interpersonal and relationship skills, and conflict resolution. The participants in the present study reported having difficulties regulating their affect, particularly negative affect. They tended to attempt affect regulation in rigid and unhelpful ways, which may have impacted on the development and maintenance of their chronic pain and disability.

Kobak and Sceery (1988) view attachment theory as a theory of affect regulation. Affect regulation influences, and is influenced by, attachment. Attachment styles can be understood as sets of rules that guide responses to challenging situations (Kobak & Sceery, 1988). Securely attached people are less anxious and hostile, have less negative affect, and report little distress and high social support. Insecurely attached people are more hostile, anxious, lonely, and distressed, and report low social support. They also display heightened, and sometimes inappropriate, expressions of distress (Kobak & Sceery, 1988). Avoidant attachment is governed by rules that restrict acknowledgment of distress and support seeking. Ambivalent attachment has rules that direct attention and, therefore, produces hypervigilance to distress (Kobak & Sceery, 1988). Strategies used to achieve attachment “security” depend on the person’s history of regulating distress. This is also known as affect regulation. If a parent rejects a child’s attempt to gain comfort there is a negative outcome. The child then attempts alternative methods of coping. With time, this way of reacting and interacting applies to social as well as parent-child relationships (Kobak & Sceery, 1988). Attachment styles develop from experiences of regulating distress with attachment figures. These experiences create rules that are generalised and then used in future distressing situations (Feeney & Ryan, 1994).

Difficulties in affect regulation, particularly expressed emotion, as found in the present study, are covered in some detail in relation to other psychological disorders, particularly schizophrenia. A review of the literature did not identify issues pertaining specifically to chronic pain and expressed

emotion. Expressed emotion was found to have been recently addressed with respect to health in general (Wearden, Tarrier, Barrowclough, Zastowny, & Rahill, 2000).

Participants in the present study used rigid strategies in order to manage their affect, particularly their negative affect. This in particular related to their need to be perfect, and to their work attitudes and behaviours. These areas are reviewed below, outlining the outcomes of this study and the relevant literature.

4.1.3.8.1 PERFECTIONISM

The participants of the present study reported many aspects of perfectionism. Some also stated that they were perfectionists. They described many of the consequences of perfectionism consistent with that described in the literature discussed below. Perfectionism is related to extremes of behaviour, in particular, extremely high personal achievement and performance standards. A desire for high standards appears to be a central aspect of perfectionism, although order or control can also be important (Slaney & Ashby, 1996). Perfectionism is regarded as a stable personality trait (Hewitt & Flett, 1991a). It affects a wide range of life's activities, including academic and work endeavours, and relationships. This follows because perfectionists also expect perfection from others and are disappointed when others do not meet their high standards (Slaney & Ashby, 1996). Perfectionism is multidimensional and contains both social and personal aspects (Blatt, 1995; Flett, Hewitt, & Singer, 1995a). Further perfectionism has been found to be positively related to rigidity and inflexibility, but it is different from compulsiveness (Ferrari & Mautz, 1997; Hollender, 1965).

TYPES OF PERFECTIONISM

Ferrari and Mautz (1997) suggest that most researchers address only self-orientated perfectionism. They identified three types of perfectionism: "self-orientated", "other-orientated", and "socially-prescribed". Self-orientated perfectionists are strong in the motivation to be perfect. These perfectionists set and hold unrealistic standards for themselves. Their thinking is often compulsive and dichotomous, comprising either of total success, which is specifically defined, or of total failure, which has a wide definition. Self-orientated perfectionists strive to be infallible. They are often self-critical and/or self-punishing (Ferrari & Mautz, 1997). Ferrari and Mautz (1997) describe self-orientated perfectionists as "persons who are unable to shift from one activity to another and who seem to be unable to adjust readily to new surroundings ... these persons may have difficulty with effective coping with life stressors" (p. 5). Other-orientated perfectionists are highly motivated for others to be perfect. They set and hold unrealistic standards for others and rigorously evaluate the behaviour of others. They may react with anger or hostility towards others when they fail to meet their expectations (Ferrari & Mautz, 1997). People who feel pressure to live up to the standards of significant others, and who perceive the standards and expectations of others to be unrealistic, are socially-prescribed perfectionists. Such people believe that others will negatively evaluate them. As a result, they push themselves to be perfect. They place great emphasis on the approval of others (Ferrari & Mautz, 1997). These definitions of perfectionism are the same as those used by Hewitt and

Flett (1991a) in their Multidimensional Perfectionism Scale.

Flett, Hewitt, Blankstein, and O'Brien (1991) reported that these three different dimensions of perfectionism [as measured by Hewitt and Flett's (1991a) Multidimensional Perfectionism Scale] were intercorrelated. Flett *et al.* (1991) reported that self- and other-orientated perfectionism were both related to self-control, whereas socially-prescribed perfectionism was not. These three dimensions of perfectionism are distinguished in terms of the objects of their thoughts, feelings, and behaviours (Dean, Range, & Goggin, 1996). The participants of the present study exhibited evidence for each of these three types of perfectionism. Most participants had signs relating to all of these types of perfectionism.

An earlier differentiation was made between normal and neurotic perfectionism. In 1978 Hamachek described normal perfectionists as those who strive for perfectionism, but retain their flexibility. The high standards that they set motivate them. They are able to constructively manage their feelings of inferiority. Thus, their perfectionism is a positive attribute. However, neurotic perfectionists constantly feel empty and dissatisfied. They set themselves very high standards for every situation, which they cannot meet. They feel constantly overwhelmed by inferiority. Ashby and Kottman (1996) also consider normal perfectionism to be adaptive. Flett *et al.* (1991) suggests that Hamachek's (1978) neurotic perfectionists would score highly in all of their three types of perfectionism; other-orientated, self-orientated, and socially-prescribed. It is likely that some of the participants in the present study would have met the criteria for neurotic perfectionism. Their perfectionism caused them difficulties and it was held very rigidly.

POSITIVE VERSUS NEGATIVE PERFECTIONISM

Many of the participants in the current study saw both positive and negative aspects to their perfectionism. However, most primarily identified perfectionism as a negative aspect of themselves and reported that it was related to many negative consequences. In particular, the participants regularly discussed their fears of failure and rejection, and their lack of self-confidence and anxiety.

Perfectionism has, in the past, been viewed as either a positive or negative factor. In reality it probably displays both positive and negative aspects (Blatt, 1995). The difference in how it is viewed may also relate to the extremity and rigidity with which it is held. Recent research has been conducted into the functionality of perfectionism. It has been suggested that perfectionism may be maladaptive, negatively influencing both thinking and behaviour (Ferrari & Mautz, 1997). However Slaney and Ashby (1996) suggest that researchers may be over-emphasising the negative aspects of perfectionism. Their research found that many people saw positive aspects to their perfectionism, although nearly all thought that their perfectionism caused them distress. Women rate their perfectionism more negatively and as more distressing than men (Slaney & Ashby, 1996). Perfectionism has also been reported to have both a positive and a negative impact on sporting competitors. Athletes who rated high in "concern over mistakes" reported less self-confidence, more anxiety, and they thought more about failure. They also used higher levels negative thinking and reacted negatively to their mistakes that they made. "High personal standards", on the other hand, were positively related to an orientation

towards success, rather than negative thinking, thus making these people likely to be highly motivated (Frost & Henderson, 1991). People with high self- and other-orientated perfectionism report greater "learned resourcefulness". This may be due to a higher level of self-control, intrinsic motivation, and persistence (Flett *et al.*, 1991). Perfectionism appears to be multidimensional. A multidimensional approach to the study of perfectionism is therefore warranted (Flett *et al.*, 1991). Blankstein, Flett, Hewitt, and Eng (1993) also discussed perfectionism as being multidimensional. They suggested that it encompassed both self and social aspects.

DEVELOPMENT OF PERFECTIONISM

Research points to perfectionism developing from a young age (eg., Ashby & Kottman, 1996; Blatt, 1995; Hamachek, 1978; Hollender, 1965). This was found in the present study. It appears that it may be related to factors such as attachment. Hamachek (1978) suggested that neurotic perfectionism is likely to result from childhood experiences that were disapproving, critical, inconsistent, or conditional. These negative factors became associated with anxiety and fear, and therefore they are avoided. Perfectionism is most common in people, who as children were insecure and needed approval and acceptance from parents who were difficult to please. Such children formed a belief that if they performed perfectly they would get the acceptance and approval they desired (Blatt, 1995; Hollender, 1965). This self-evaluation becomes internalised and self-perpetuating. Most of the participants in Slaney and Ashby's (1996) research saw their perfectionism stemming from one or both of their parents. Perfectionists fail to internalise the concept of "good enough". Rice, Ashby, and Preusser (1996) found a difference in the quality of family relationships between normal and neurotic-perfectionists. Neurotic perfectionists saw their parents as more demanding and critical, and less encouraging. The more adaptive the perfectionism, the less the person saw their parents as critical. A mother's perfectionism was found to be positively-related to her daughter's perfectionism, whereas a father's perfectionism was negatively-related to their child's perfectionism (Rice *et al.*, 1996). However, the research outcomes are mixed and tend to show gender differences. For example Flett *et al.* (1995a) reported a link between socially-prescribed perfectionism and an authoritarian parent, either mother or father. However, this was found only for male children. Flett *et al.* (1995a) found a negative relationship between other-orientated perfectionism and maternal permissiveness, again only for male children. Females were reported to have a positive relationship between self-orientated perfectionism and authoritative maternal and paternal parenting. Further, Flett *et al.* (1995a) observed a relationship between socially-prescribed perfectionism and paternal permissiveness. Flett *et al.* (1995a) suggests that the gender differences may exist because boys are encouraged to be more competitive and achievement-orientated and are therefore reinforced for this behaviour. They also suggest that the gender difference may be linked to females developing their own high standards when they have a supportive family environment. Indeed, the participants in the current study described constantly seeking approval from their parents. Unfortunately, they felt that they were never good enough. Their descriptions of their parents' reactions can be summarised as critical, disapproving, and inconsistent. They generally reported negative, or absent, relationships with their mothers and fathers. These factors were related to unhelpful perfectionism.

PSYCHOPATHOLOGY AND PERFECTIONISM

The participants in the current study displayed a wide range of pathologies, including depression, anxiety, suicidal behaviour, psychosomatic symptoms, guilt, shame, other negative emotions, and low self-esteem. This is consistent with the psychopathologies demonstrated by perfectionists in the literature.

Perfectionism is related to a wide range of pathologies. All three forms of perfectionism were reported to be pathological in certain situations (Flett, Hewitt, & Dyck, 1989; Hewitt & Flett, 1991a, 1991b). Ferrari and Mautz (1997) found that self-orientated perfectionists reported more psychopathologies. Conversely, Flett *et al.* (1991) reported that socially-orientated perfectionism was more closely associated with psychopathology than the other two types. Perfectionism has been suggested to play a role in a variety of disorders such as depression, suicide, anxiety, eating disorders, obsessive compulsive disorder, alcoholism, psychosomatic disorders, sexual dysfunction, Type A behaviour, and personality disorders. It is also thought to play a role in feelings of guilt, failure, shame, low self-esteem, and in indecisiveness and procrastination (Blatt, 1995; Dean *et al.*, 1996; Flett, Hewitt, Blankstein, & Dynin, 1994a; Flett *et al.*, 1995a; Juster, Heimberg, Frost, Holt, Mattia, & Faccenda, 1996). Self-orientated and socially-prescribed perfectionism have been found to be more generally related to neuroticism, along with a small relationship between other-orientated perfectionism and psychoticism (Hewitt, Flett, & Blankstein, 1991).

PERFECTIONISM AND ANXIETY

The participants in this study showed traits of perfectionism and anxiety, particularly social anxiety. They appeared to set themselves high personal goals and standards and regularly reported that they did meet them. This often appeared to be a failure in only one or two very small aspects of their goal, while they excelled in the rest of it. However, they focussed only on the small part that they perceived they did not do perfectly. They particularly believed that other people evaluated them negatively, and thought of them as failures. They also reported factors consistent with the literature on social phobia, reporting a high rate and intensity of parental criticism (Flett, Hewitt, Blankstein, & Mosher, 1995b; Frost & Henderson, 1991; Fry, 1995; Juster *et al.*, 1996).

Blankstein *et al.* (1993) reported that both self- and socially-orientated perfectionism are related to fears about failure, making mistakes, losing control, and feeling angry. They reported that socially-prescribed perfectionism has been found to be associated with the greatest number of fears, being particularly related to negative evaluation and failure, being criticised and looking foolish, fears of authority, and other social fears. It is also linked to fears of sexual and aggressive situations. Other-orientated perfectionism has not been related to specific fears (Blankstein *et al.*, 1993). Self and other-orientated perfectionism is related to a higher desire for control and greater perceived personal control (Flett *et al.*, 1995b). Perfectionists tend to have negative reactions when they make mistakes. They tend to equate mistakes with failure and expect a negative evaluation of their mistakes by others (Juster *et al.*, 1996). Neurotic perfectionism is described as an intense desire to avoid failure. Perfectionists do not get satisfaction from doing things well, because no effort is good enough. They constantly

seek approval and acceptance. This causes distress before, during, and after tasks (Blatt, 1995). Fears of failure and criticism have been found to be present from a young age. Taken to the extreme, these tendencies and fears may manifest in specific phobias, such as school phobia (Blankstein *et al.*, 1993), see section 4.1.3.7 on school refusal. The participants in the current study regularly appeared concerned about failure and performing well enough. They constantly sought approval from others, they often withdrew from social situations and they kept tight controls on their emotional expression.

In addition to fears, much anxiety is associated with perfectionism (Flett *et al.*, 1989). Flett, Hewitt, Endler, and Tassone (1994b) and Hewitt and Flett (1991b) found that anxiety was related to self- and socially-prescribed perfectionism rather than other-orientated perfectionism. Many researchers have linked perfectionism specifically with shyness and social anxiety (Flett, Hewitt, & De Rosa, 1996). Juster *et al.* (1996) reported that perfectionism was related to social phobia at a young age and that social phobia shares many attributes in common with perfectionism. These children are more concerned about their mistakes, doubt their actions more, and report that they do not live up to their parents' standards. They experience increased negative affect, interpret their mistakes as failure, and believe that others also see them as a failure. They report higher parental criticism, but similar levels of expectation, when compared to young people without these difficulties. Juster *et al.* (1996) suggests that parental criticism may be causally related to social phobia. The parents of these children are seen as relying more on the opinions of others and use higher levels of shame as punishment. The participants of this study had some symptoms consistent with social phobia. They were very socially isolated. This may have been related to their perfectionism.

PERFECTIONISM AND DEPRESSION

People in the present study reported difficulties with both anxiety and depression. Their backgrounds included many of the vulnerability factors associated with depression. These included disrupted interpersonal relationships and negative life-events. They often felt they had little control over events in their lives. The participants regularly reported feeling that they had failed or been rejected. They were also critical of themselves and others and often worked very hard in order to gain acceptance and perfection.

People suffering from depression have been found to have both socially-prescribed and self-orientated perfectionistic tendencies (Hewitt & Flett, 1991b). Blatt (1995) claimed that neurotic-perfectionism includes intense self-criticism, which may increase the likelihood of such people developing depression. Perfectionism interacts with negative or disruptive life-events, especially interpersonal relationship difficulties, including loss or separation, or threats to self-esteem, which further increase the likelihood of depression. Flett *et al.* (1995b) suggested that a similar interaction between self-orientated perfectionism and stress or a major life event which could produce depression. They also suggested that lower self-control contributed to depression. Socially-prescribed perfectionists have high standards that they feel are externally imposed. These standards could feel uncontrollable, therefore resulting in feelings of anxiety, anger, helplessness, hopelessness, and failure. These standards are also often associated with depression and suicidality (Blatt, 1995).

Intense perfectionism has been found to interfere with the short-term treatment for depression. However, long-term intensive treatment is effective for perfectionists who suffer from depression. Therefore, intensive longer-term treatment for depression may be necessary for perfectionistic or self-critical people (Blatt, 1995). This may be an important fact worth noting when treating perfectionistic chronic pain patients for a depressive illness, or even for chronic pain.

Blatt (1995) suggests different types of depression exist, some of which are related to perfectionism. The first of these is anaclitic or dependant depression, which includes feelings of loneliness, helplessness, and weakness, along with fears of being abandoned. For these people, separation and loss causes fear. These difficulties are often dealt with maladaptively. The second type of depression identified by Blatt (1995) is introjective or self-critical depression. This can be seen as being particularly related to perfectionism. This includes feelings of unworthiness, inferiority, failure, guilt, and self-criticism. Self-critical depressives fear disapproval, criticism, and rejection, and strive for perfectionism and acceptance. They are often highly competitive and work very hard. They are also critical of themselves and others. Self-critical depression is associated with insecure attachment. Self-critical depressives often experienced disrupted parent-child relationships with inconsistent care, which leads to impaired schema and working models of caring relationships. Here the individual either constantly seeks closeness to people or constantly expects criticism and rejection and therefore avoids people. This creates a vulnerability to depression. Beck (1967) called this the “depressive triad” because it involves negative thoughts about the self, the world, and the future.

SUICIDE AND PERFECTIONISM

Most of the participants in this study had attempted suicide, and even more expressed suicidal ideation. Although they did not suggest this was directly related to their perfectionism, they did suggest it was related to factors associated with perfectionism, such as perceived failure, and being unable to live up to their personal standards.

Suicide is often related to depression. Suicide is also associated with perfectionism (Adkins & Parker, 1996; Ferrari & Mautz, 1997). Suicide has been found particularly in those with socially-prescribed perfectionism (Dean *et al.*, 1996). Dean *et al.* (1996) reported that hopelessness and depression accounted for some of the variance in suicidal ideation. This fits with Baumeister's (1990a) cognitive deconstruction and escape theory of suicide. Baumeister (1990a) discussed factors relating to suicidal behaviour that could be seen as indicative of self-orientated and socially-prescribed perfectionism. In particular, he discusses high personal standards and the belief that others hold high expectations and standards for the individual (Blatt, 1995). Cognitive deconstruction is discussed further in section 4.2.3.6.4. Self-orientated and socially-prescribed perfectionism can lead a person to feel that they have failed, both in themselves and when measured against the standards they believe others hold for them. This can lead to hopelessness, helplessness, and despair and, in the extreme, depression and suicide (Blatt, 1995). Adkins and Parker (1996) reported finding people whom they labelled “passive perfectionists”. Passive perfectionists have difficulty with procrastination, fear of making mistakes, and are more likely to be suicidal, while those perfectionists who strive for achieve-

ment do not have these difficulties. It appears that aspects of perfectionism are related to increased suicidal ideation.

SOCIAL ADJUSTMENT AND PERFECTIONISM

Participants in the present study tended to use maladaptive coping strategies and to isolate themselves from others. They often identified themselves as having difficulty with social interactions and as lacking social skills. While they were very self-controlled and self-critical, they perceived themselves as having very little actual control. This is consistent with the research examining social adjustment and perfectionism, which is described below.

Perfectionists tend to feel much negative emotion. For example, neurotic-perfectionists experience greater feelings of inferiority and emotional distress than non-perfectionists (Ashby & Kottman, 1996). People with a high level of perfectionistic tendencies tend to use different coping strategies than those who were less perfectionistic. Perfectionistic women tend to prefer to work alone. Emotional coping strategies are used in stressful situations. Perfectionistic women have characteristics of people who are highly self-reliant and concerned with self-improvement. They are self-critical and controlling (Fry, 1995). A low level of adaptive functioning was found in people with a high level of socially-prescribed perfectionism and a low level of learned resourcefulness. These people did not respond adaptively to social pressure (Flett *et al.*, 1991). Socially-prescribed perfectionism is related to procrastination, particularly academic procrastination. The fear-of-failure component of procrastination is associated with all types of perfectionism (Flett, Blankstein, Hewitt, & Koledin, 1992). Flett *et al.* (1992) suggests that procrastination stems from anticipation of social disapproval in socially-prescribed perfectionists.

Social adjustment is related to the different types of perfectionism. Socially-prescribed perfectionism has been reported to be related to poorer psychosocial adjustment, greater loneliness, shyness, fear of negative evaluation, self-control, and lower social self-esteem and emotional expressiveness. Socially-prescribed perfectionists have greater social sensitivity. They also report having fewer social skills. People with socially-prescribed perfectionism tend to anticipate criticism and become withdrawn and isolated, and they are likely to suffer from psychosocial problems (Flett *et al.*, 1991, 1996). Flett *et al.* (1991) found that socially-prescribed perfectionism is related to reduced control and, therefore, poorer adjustment. Self-orientated perfectionism is related to greater emotional sensitivity and social expressiveness. Other-orientated perfectionism is related to higher assertiveness and greater emotional sensitivity and expressiveness. Neither self- nor other-orientated perfectionism is reported to be related to poor psychosocial adjustment (Flett *et al.*, 1996).

PERFECTIONISM AND PERSONALITY

The participants in this study had rigid behaviours consistent with Type A behaviour and other personality disorder clusters. Particularly rigidity, striving for success, competitiveness, and a tendency to attempt to do too much at one time. This is consistent with the literature examining different personality characteristics, particularly Type A personality characteristics and is consistent with features

of perfectionism.

Type A personality, which is characterised by competitiveness, aggressiveness, hostility, speed, impatience, and a tendency to do many activities at one time, has been related to perfectionism (Flett *et al.*, 1994a). Type A behaviour is more likely when there is a difference between the very high standards of a person and their behaviour. People displaying Type A behaviour are likely to be self-critical. This is thought to stem from rigid thinking and the need to succeed. These people tend to set goals that exceed performance (Flett *et al.*, 1994a). The association is strongest between Type A behaviour and self-orientated perfectionism. Type A behaviour also relates to socially-prescribed perfectionism. This perfectionism may be the cause of distress seen in those with Type A behaviour. Type A individuals are perfectionists in a wide range of situations. They also have high expectations of others (Flett *et al.*, 1994a).

Hewitt, Flett, and Turnbull-Donovan (1992) and Hewitt and Flett (1991a) reported that other-orientated perfectionism is related to narcissistic and histrionic personality styles, whereas socially-prescribed perfectionism is related to both the odd-eccentric and anxious-fearful personality clusters.

PERFECTIONISM AND STRESS

Consistent with research examining perfectionism and stress, the participants in the current study reported feeling stressed. They also reported being unable to express their stress and other emotions to others. They had few or poor coping strategies to manage their stress. In response to stressful situations they reported withdrawing and isolating themselves, rather than seeking assistance. Alternatively, they worked harder as a maladaptive strategy to prevent failure. Some participants reported that they found their perfectionistic behaviour stressful in its own right. The literature examining perfectionism and stress and distress is reviewed below.

Socially-prescribed perfectionists tend to suffer from stress and emotional distress. These perfectionists also fail to adaptively express their distress (Flett *et al.*, 1996). People with perfectionism generally have poor or maladaptive coping strategies for managing stress. Two techniques that can reduce the impact of stress are humour and an optimistic outlook (Fry, 1995). Unfortunately, perfectionists do not tend to use these adaptive strategies. The coping strategies of perfectionistic women were reported by Fry (1995) to involve more personal involvement, less delegation to others, with more active withdrawal, distancing, and self-blame. When under stress, perfectionistic women tend to change themselves rather than their environment (Fry, 1995). Not only do perfectionistic people experience greater difficulty managing stress, they also tend to perceive a higher level of stress in the situations they are in. They also perceive a stressful situation as having more personal consequences and they anticipate more harm and loss. Perfectionism may actually be a source of stress. It can guide cognitive processes and coping behaviour, particularly negative self-evaluations (Fry, 1995).

HEALTH AND PERFECTIONISM

The participants in this study obviously had health difficulties (by virtue of the selection criteria). They also reported many somatic complaints pre-dating the onset of their chronic pain. It is proposed

that perfectionism was a vulnerability factor for chronic pain in the participants of this study. As discussed in this perfectionism section they had many features common with and effects of perfectionism.

A perfectionist can suffer from a range of difficulties. Not the least of these are health difficulties. Perfectionism has been claimed to relate to a range of health difficulties such as physical illness, exhaustion, burnout, suicidal behaviour, decreasing self-esteem, using escape or avoidance coping, and thinking that problems can be overcome by working harder or having more self-control (Fry, 1995; Ferrari & Mautz, 1997). Negative health outcomes are related to a number of factors associated with perfectionism. For example, negative health outcomes are positively-related to Type A personality behaviour (Flett *et al.*, 1994a). They are also negatively-related to humour and optimism, which tend to be low in perfectionistic women. When present, humour and optimism moderate the effects of stress on burnout, psychological distress, physical health, and self-esteem (Fry, 1995). Perfectionism is a vulnerability factor for health difficulties (Flett *et al.*, 1996; Fry, 1995). Many chronic pain patients have evidence of hyperactivity pre-pain-onset. This has been reported to be related to perfectionism and it may place these people at greater risk of developing chronic pain (Van Houdenhove, 1986).

Patients with high perfectionistic tendencies reported that somatic symptoms related positively to events that jeopardised their sense of accomplishment, whereas this was not the case for patients who were not perfectionists (Organista & Miranda, 1991). When researching specific pain issues and perfectionism, recurrent abdominal pain in children was reported to be related to perfectionism (Liebman, 1978). Thus, in perfectionistic people, events may be related to somatic symptoms. This may increase their vulnerability to develop chronic pain.

PERFECTIONISM AND DIATHESIS-STRESS MODEL

Perfectionism has been correlated with neuroticism and trait anxiety. In particular, an interaction has been reported between perfectionism and life stress that predicts neuroticism and trait anxiety (Flett *et al.*, 1989). This fits with a diathesis-stress model, where perfectionism is a vulnerability factor. When life stress and perfectionism are present, there is an increase in neuroticism and anxiety. This does not occur when life stress alone is present. Joiner and Schmidt (1995) completed a prospective study into the diathesis-stress model and perfectionism. They reported that males with socially-prescribed perfectionism experienced increases in depression when subjected to high levels of interpersonal or achievement related stress. This finding supports the diathesis-stress model. Interpersonal stress had a similar effect for males with self-orientated perfectionism. However, similar results were not observed for females. Negative life-events increase depression in both socially-prescribed and self-orientated perfectionists. Socially-prescribed and self-orientated perfectionism predicts increased depression. Socially-prescribed perfectionism also predicts increased anxiety (Joiner & Schmidt, 1995). Flett *et al.* (1995b) also found support for a diathesis-stress model. They reported that perfectionists who experience life stress were more vulnerable to depression, indicating that perfectionism is a vulnerability factor. It is likely that perfectionism is one of the vulnerability factors that predisposed the participants of the present study to develop chronic pain. It is

proposed that perfectionism interacts with many of the other vulnerability factors, as suggested by a diathesis-stress model, to produce thoughts, feelings and behaviours that increase the likelihood that a person will develop chronic pain and that chronic pain and disability will be maintained.

SUMMARY OF PERFECTIONISM

Each of the participants in this study exhibited perfectionistic tendencies. They presented with symptoms that are related to many of the factors that have been discussed in the literature. The participants often suffered from all three types of perfectionism. Many described difficulties arising from their perfectionistic way of thinking, feeling, and behaving. These difficulties have also been reported in the reviewed literature. The literature identifies health difficulties, although not specifically chronic pain, as being related to perfectionism. The diathesis-stress model can be extended to include perfectionism and other factors as vulnerability factors for the development of chronic pain.

4.1.3.8.2 WORKAHOLISM

Workaholism can be defined as an extreme commitment to work, involving considerable time spent performing work-related activities, to the detriment of social, family, and recreational activities (Scott, Moore, & Miceli, 1997). The present study identified long hours of work as vulnerability and maintaining factors for chronic pain and disability. The participants were very committed to work and worked when they reported that it was unhelpful for them to be doing so. Their beliefs about work disrupted the treatment and management of their pain, work also disrupted their relationships and other activities. Thus they meet the above definition of workaholism.

Workaholics persistently and frequently think about work when they are not at work. They may obsess about work. They work beyond what is expected by the requirements of their work or that required by their financial situation. The time devoted to work appears to be the critical feature of workaholism (Scott *et al.*, 1997). Workaholism has also been defined as an addiction to work, or an uncontrollable need to work. However, not all workaholic patterns are addictive or dependent (Scott *et al.*, 1997). Workaholism is a relatively stable behavioural style, whose incidence is increasing (in America) (Scott *et al.*, 1997). Some people view workaholism positively, relating it to the achievement of goals. Others may view it negatively, relating it to burnout and broken marriages. Workaholism can be detrimental to the work situation. This is true when the workaholic is obsessive, unable to relax, dishonest, and self-centred (Scott *et al.*, 1997).

Scott *et al.* (1997) discussed three types of workaholic patterns: “compulsive-dependent”, “perfectionist”, and “achievement-orientated”. These workaholic behavioural patterns are not mutually exclusive. Compulsive-dependent workaholics work longer than they intend. They know that they work excessively but feel unable to control it. They continue to work despite health and social problems and experience anxiety when away from work. For them the consequences are burnout, exhaustion, insomnia, low creativity, uni-dimensional thinking, poor work performance, and limited pleasure or satisfaction in their job and/or their life. These negative consequences are additional to physical and psychological problems such as substance abuse, cardiovascular complaints, depression, anger,

apathy, anxiety, stress, low self-esteem, and self-confidence.

Perfectionistic workaholics have a preoccupation with perfectionism, orderliness and control at the expense of other factors such as productivity, efficiency, flexibility, leisure and social activities. They may have a preoccupation with details, rules, and lists. Consequently, they often do not have as much control as they would like. This leads to hostile interpersonal relationships, low job-satisfaction, low job-performance, absenteeism, and high job-turnover. Perfectionistic workaholics have difficulties delegating and are often unable to see the big picture. They avoid making decisions. In addition, they have physical and psychological problems such as stress and depression.

Achievement-orientated workaholics often have a "Type A" personality. These people sacrifice social and recreational activities for work. They identify strongly with their careers, investing in them in other ways apart from the long hours they work. They are highly motivated, attempt difficult tasks, work towards distant goals, and respond well to competition, always striving for excellence. They often prefer to take personal responsibility in their employment. As a result, consequences are often positive with high job-satisfaction. However, this only occurs if they are able to meet their work aspirations. If they cannot meet their goals, they can become frustrated with low job-satisfaction. They often have low family and recreational satisfaction. They have high job-performance levels and can be self-employed or entrepreneurial (Scott *et al.*, 1997). The consequences of workaholism may be initially positive, but become more negative over time. If work and non-work activities conflict for achievement-orientated workaholics there is often low work and life satisfaction (Scott *et al.*, 1997).

Many of the participants in this current study fitted into one or more of these three types of workaholism. The participants described some positive aspects to their workaholism. However, they also described many negative aspects, which were often related to their self-esteem and relationships. This was in addition to their pushing themselves to continue at work when they initially developed pain. This may have increased their likelihood of developing chronic pain.

4.1.3.8.3 WORK AND OTHER ROLE DISRUPTION

The participants in the present study reported much disruption to many of their roles. They discussed this primarily in terms of vocational and family disruption. Many changes were evident, some of these changes resulted in positive outcomes, although most outcomes were reported to be negative.

Chronic pain involves change in a number of roles. There are several different role types: "familial", "occupational", "societal", and "personal" (Tunks & Roy, 1982). Chronic pain does not necessarily result in the abandonment of all roles, but can be disruptive. As a result, return to work is not the only role that needs to be examined as a result of chronic pain (Tunks & Roy, 1982). The working role is very important and, if maintained, it can provide protection against other difficulties and role changes (Tunks & Roy, 1982). Differences exist between the acute sick role and the chronic sick role. With chronic pain, the person may never totally resume their previous roles. The new roles the person in chronic pain adopts, and the new skills they learn, may differ from the expectation of their family and society and therefore tension may arise (Tunks & Roy, 1982). Tunks and Roy (1982) suggest that when loss or change in role occurs in one part of a family system (that is, with the person with

chronic pain), there is a parallel shift in expectations of other family members.

Chronic pain may be incompatible with the continuation of the previous occupational role. Loss of this role can result in loss of income, financial security, and respect. Although pain may be an obvious cause for occupational role disruption, it may not be the only factor preventing return to work. Other disincentives may exist for recovery and return to work. When the occupational role fails, the family role may also change. This can cause family disruption. An occupational role provides a sense of self-perception, mastery, and control. Its loss threatens these self-esteem modulators and personal roles. The person may regress and become more dependent. Pain may become a form of interpersonal communication. Chronic pain patients are more likely to have a family member who selectively responds to their illness communication (Tunks & Roy, 1982).

Chronic pain does not necessarily mean the abandonment of all previously held roles. Alterations maybe required allowing the continuation of various roles that were previously performed. In chronic pain, the person may take on the role of the patient, affecting their societal roles. The patient may visit health-professionals and present symptoms and expect to be cured. This may be effective behaviour in the acute pain phase. However, with chronic pain the emphasis may need to change to the modification of distress. The person in chronic pain needs to take responsibility for pain management, and adjusting to a new way of life and a new set of responsibilities (Tunks & Roy, 1982).

There are psychological and socioeconomic predictors for return to work. Psychosocial factors have been found to determine return to work better than physical factors. Anticipation of re-injury is more predictive of return to work than presence or severity of symptoms (Arnoff & Feldman, 2000). Occupational predictive factors for poor prognosis include conflict, poor performance evaluations, brief time on the job, and disciplinary action (Arnoff & Feldman, 2000). Environmental factors, such as working conditions, impact on the development of chronic pain more than individual variables such as psychiatric and psychological factors, or social status (Nachemson, 1982). In addition, fear of re-injury, loss of compensation, and job dissatisfaction influence employment status (Turk, 1996b).

Gallagher, Rauh, Haugh, Milhous, Callas, Langelier, McClallen, and Frymoyer (1989) conducted a prospective study examining return to work. They studied people receiving care at a pain clinic and people who had applied for, but had not yet obtained, compensation. They reported that no biomedical factors predicted return to work, although a number of psychosocial factors did. This research indicated that chronological age and length of time out of work interacted with psychosocial variables to predict return to work. Time spent absent from work is an important risk factor. This may be because of weakened job identity and the fact that coping strategies associated with not working increase over time. A belief of perceived ease of changing occupations is also an important predictive factor, especially for younger people. Return to work is also predicted by health locus of control beliefs, hysteria, and ability to do daily activities (Gallagher *et al.*, 1989). Bigos, Battie, Spengler, Fisher, Fordyce, Hansson, Nachemson, and Wortley (1991) found similar factors predicted return to work.

Other researchers have reported that work behaviour and beliefs can predict and affect the likelihood of chronic pain. For example, susceptibility to illness has been reported to be related to social mo-

tives, especially power, particularly when the person was under stress. Motivation to affiliate may be related to decreased susceptibility to illness (Jemmott III., 1987). People with a high level of Type A behaviour, and high perceived control, perform better and have more job-satisfaction. However, they also have a larger number of somatic complaints than those with low perceived control (Lee, Ashford, & Bobko, 1990). Greenberger, Strasser, Cummings, and Dunham (1989) also found that personal control significantly predicted job-satisfaction and performance.

Certainly in this current study, return to work and other roles, including functioning in general, appeared to be related more to psychosocial factors, particularly to beliefs and patterns of reinforcement, than to physical factors. While the participants in this study had many changes in role, work and interpersonal role changes were most often discussed.

4.1.4 SUMMARY OF BACKGROUND / VULNERABILITY AND PAIN AND DISABILITY MAINTENANCE FACTORS

Empirical evidence exists in the literature linking the background / vulnerability and pain and disability maintenance factors reported by the participants in this current study. The common feature is attachment style. It may be that when under pressure, either due to major life-events, illnesses and injuries, or the pressure of chronic pain, features of the participant's attachment style become activated. Under these conditions the participants have a distinctively negative view of themselves and of others and the world. These negative views affect their social interaction. For the participants in the current study this led to isolation, lack of communication, lack of interpersonal skills with poor social competence, and maladaptive self and affect-regulation. These factors interacted with the reaction of others, and the usually negative feelings that were elicited reinforced the existing attachment style, creating a self-reinforcing cycle.

These factors contribute to vulnerability to develop chronic pain. Specific interactions with others and beliefs were displayed that were likely to exacerbate the initial acute pain and lead to chronic pain. When the person is suffering from chronic pain, these factors are likely to maintain their chronic pain and disability by leading to maladaptive beliefs and ways of interacting with others and the world.

There is evidence that these vulnerability factors could fit a diathesis-stress model, which explains how different disorders or difficulties occur. Kerns and Jacob (1995) indicate how the diathesis-stress model might fit chronic pain difficulties. This is supported by the current research. Many of the vulnerability factors found in Kerns and Jacob (1995) research, and this present study, have been reported as vulnerability factors for many other types of difficulties. Examples are eating disorders and child sexual offending (Fairburn, 1997; Finkelhor, 1984; Hudson *et al.*, 1999; Marshall & Barbaree, 1990; Ward *et al.*, 1996, 1995a, 1995b). It may be that people who have a group of vulnerability factors are vulnerable to develop some difficulty. A person, who experiences an injury or other pain causing difficulty, may develop chronic pain rather than some other disorder. This probably is also influenced by their implicit theories. These possibilities need to be further explored.

4.2 DISCUSSION OF ACUTE PAIN AND MANAGEMENT OF CHRONIC PAIN AND DISABILITY

Pain management is an ongoing process whenever pain is present. It starts with an acute pain event and continues until such time as the pain is resolved. For some, such as the participants in this study, their pain had not resolved. It was still present at least six months after its first onset. Such pain is defined as chronic. Effective pain management strategies vary with time and situation. The effect of management on the acute and chronic pain stages is now discussed.

4.2.1 REVIEW OF THE ACUTE PAIN SECTION

The acute pain section of this theory comprises of a number of stages. These are described as a series of continua, anchored by poles at each end and illustrated in figure 3.2. The participants followed a reasonably clear set of steps through the continua in this section. Each participant was affected by varying levels of the background / vulnerability factors. They each developed pain. This was followed, at some point in time, by a degree of treatment-seeking behaviour. Their level of adherence to treatment varied. For all the participants in this study, the outcome led to chronic pain, with some level of disability and consequences. Implicit theories and impeding factors also influenced the many stages of pain management.

Background / vulnerability factors predisposed the participants to develop ongoing pain. These were present before the onset of pain. Each of these factors fit on a continuum, which varies between low and high. This research is unable to establish whether the background / vulnerability factors increased the likelihood of an initial pain episode occurring. To be included in the study, each of the participants only had to have developed continuing pain. It is possible that the participants' personality characteristics might have predisposed them to a greater risk of an injury occurring. The physical particulars of the injury or pain-eliciting episodes were different for each participant, as were the contexts in which they occurred. The quality of pain-onset and the participant's implicit theories and beliefs affected their treatment-seeking behaviour, as did their level of impeding factors. The rapidity with which the participants sought treatment appeared to influence their pain outcome. Many participants may have caused additional damage and delayed healing by postponing health-professional treatment. This delay may have been due to their implicit theories about the cause of their pain, and their lack of trust in others. Their implicit theories also influenced their treatment adherence. Many of the participants adhered to treatment only to a very limited degree. This was, in part, due to communication difficulties between the health-professionals and the participants. The participants all reached an outcome as a result of their treatment, or lack of it. This was either negative or mixed, and involved them still experiencing pain six-months after pain-onset. The participants all experienced a varying degree of disability. This is likely to have been due to their beliefs and their chosen pain management strategies. A feedback loop exists, with the participants seeking further treatment. This additional treatment-seeking started a cyclical process of pain management in the acute pain phase.

Pain continues with the treatment being unsuccessful in its relief. Those for whom treatment was

successful did not join this chronic pain study unless their pain re-occurred at the initial or another site. Theoretically, if treatment outcome was positive and successful in relieving pain long-term, or if there was a successful resolution of pain without treatment, the outcome would be a functional one with no pain. Due to the selection criteria, no participants fitting this description were interviewed. This outcome is merely theoretical, although common experience supports the notion of this category. For pain to become chronic, any treatment sought is unsuccessful in the long-term treatment of the pain, by definition. Many of the participants reported that treatment was initially partially successful in relieving the pain. However, this improvement was not maintained over time and their pain subsequently continued and became chronic.

The two aspects of the model, which are seemingly outside this linear process, are the impeding factors and implicit theories. Impeding factors delay treatment-seeking and decrease treatment-adherence. These often appeared to be random factors. However, on closer inspection, some can be seen to be influenced to some extent by the background / vulnerability factors. Implicit theories are also very dependent on past experience and learning, including factors included in the background / vulnerability section. Implicit theories affect most levels of management of pain and disability. The central issue is the match between the participants' implicit theories and beliefs, and their personal experience of the situation. Of relevance is the similarity between their beliefs and those of the health-professionals they consulted. The beliefs of the participants who maladaptively managed their pain, especially those with high disability, tended to mismatch those of their health-professionals.

It is important at this stage to note that these participants were all chosen because they fitted into a "grey area" of injury. They did not have an injury or illness that was considered so extreme that chronic pain and disability were inevitable. Nor did they have an injury or illness that was so minor that chronic pain and disability would not exist, although some participants could not identify a cause or diagnosis for their pain. Acute pain represents the beginning of issues that continue and develop into the participants' chronic pain stage. Of particular note is the issue of balancing activities undertaken (contributing to functioning and disability) and managing pain intensity. At pain-onset, the participants tended to be unbalanced, with a focus on activity, but with insufficient emphasis on managing and decreasing pain. As time progressed, they again mis-managed the balance between activity and function, and pain. In the long-term this often occurred because they reduced activities too much, leaving them with a high level of functional disability. This may have led to the physiological effects of reduced activity with the associated increase in long-term pain. This difficulty of balancing functioning with pain intensity seems to be related to the concept of persistence. If there was insufficient persistence then the participants missed out in the initial stages with treatment options, and in the later stages with decreased activity completion and functional ability. In the case of extreme persistence, the participants did not stop or adapt when necessary. They therefore undertook too many activities. This occurred particularly in the early stages, and at times during the chronic pain stage. This again caused increasing pain, leading eventually to disability. A correct balance, with moderate persistence, results in a good outcome with managed pain, moderated activities, and little disability. If decisions are based on short-term costs and long-term gains, the outcome appears to be better. This is based on contingencies of consequences and the behavioural choices the participants made.

The focus of the acute pain stage revolved around the participants seeking treatment. They delayed seeking treatment, and when they did they entered into a cycle of treatment, with little treatment adherence. When treatment did not immediately cure their pain, they sought further or different treatment. There is considerable literature on treatment-seeking and adherence behaviour, which is discussed below in section 4.2.3.2.

4.2.2 REVIEW OF THE MANAGEMENT OF CHRONIC PAIN AND DISABILITY SECTION

The management of chronic pain and disability section of the theory represents the ongoing flow of the chronic pain experience.

Having experienced six months of acute pain, the participants entered the management of chronic pain and disability section of this model. This is modelled and illustrated in figure 3.5. The participants accessed their implicit theories about the meaning of their pain experience and about the management and treatment of their pain. These theories may or may not have been accurate. Regardless of this, implicit theories influenced their choice of management strategy. This choice was also influenced by constraints, input from significant other people, their past and present illness experiences, treatment progression, and input from health-professionals. As can be seen in figure 3.5, their choice of management strategy can be divided into six categories, under three headings. The first heading is “under-regulation”; the participants under-regulated their pain by choosing a strategy that was out of balance. It focused on function above pain management. The second heading is “mis-regulation”; within this heading the participants attempted to manage their pain. However, they did so in a maladaptive way, usually because their methods were pain-focussed rather than focussed on balancing their pain and functionality. The third heading is “appropriate-regulation”; under this heading the strategies the participants used were adaptively balanced between function and pain management. These all led to outcomes, which have been broadly categorised as “dysfunctional chronic pain”, “functional chronic pain”, and “no chronic pain”. These outcomes exist on a continuum of pain and disability. The most disabling outcomes are associated with dysfunctional chronic pain. Consequences existed, regardless of the short- and long-term treatment outcome. These were many and varied. Based on the outcome, the participants attempted to adjust to their pain and disability level and the consequences that they were experiencing. This adjustment process often led to a change in the person’s beliefs, attitudes, and implicit theories. In turn these changes influenced the choice of future management strategies. This newly-chosen strategy may have been different or similar to those chosen previously.

The long-term management of chronic pain has been the focus of much research, particularly in the past few decades. As is demonstrated in this theory, and the extensive literature, a complex interaction exists influencing the management and maintenance of chronic pain and disability. It is important to note that this section needs to be read in conjunction with the pain and disability maintenance factors in section 4.1.

4.2.3 CONCEPTS OF ACUTE PAIN AND MANAGEMENT OF CHRONIC PAIN AND DISABILITY

In this present study, many of the features of acute pain and the management of chronic pain and disability were similar. This has also been reported by other researchers, for example Philips and Grant (1991) also reported that acute pain reactions have been found to be similar to those found in chronic pain patients. As a result, the acute and chronic pain and disability management sections will be examined together.

4.2.3.1 Heterogeneity Among Chronic Pain Patients

Chronic pain patients cannot be treated as a homogenous group. Chronic pain patients differ in a variety of factors and have different outcomes. These varied factors and outcomes have been found in the present study and are confirmed in the literature described below. The participants in this study were found to differ in their thoughts, beliefs and attitudes, interactions with health-professionals and significant others, chosen strategies, treatment outcome, disability status, consequences, and adjustment to this process. Not only were differences observed between the participants, differences were also observed for an individual over time. Their situation changed as they progressed through the management process. This is particularly important, as different treatment and management strategies are most applicable and effective at different stages of the pain process. The literature, as reviewed below, reported differences based on the research participants' attitudes, behaviour, consequences, coping strategies, pain-intensity, diagnosis, treatment group, culture, gender, and age.

The literature discusses many references to how people with chronic pain differ. Several of these are discussed below as they relate to the current study. Pilowsky and Spence (1976) divided intractable pain patients into two groups. The first group is described as having a non-neurotic, reality-orientated attitude to their illness. The second group has increased abnormal illness-behaviour. The people in the latter group presented with symptoms of hysteria, conversion reaction, and hypochondriasis. Strong, Ashton, and Chant (1994) identified three distinct groups of chronic pain patients; those who are in control, those who are depressed and disabled, and those who are active copers with high denial. These groups differed on the following dimensions of pain and functioning; pain-intensity, functional disability, attitudes towards pain, pain coping strategies, depression, and illness-behaviour (Strong *et al.*, 1994). These three groups discussed by Strong *et al.* (1994) are similar to the groups of strategies used by the participants in this study, and by the same participants at different times of their chronic pain process. If taken at a specific instant in time participants in the present study could be divided into these three groups, although over time they shifted groups. The participants of the present study were also found to differ in outcomes depending on their relative position in their chronic pain process, including what types of strategies they were using.

Dworkin (1991) also divided chronic pain patients into different groups. He said that dysfunctional chronic pain is the most undesirable consequence of a persistent pain condition. Dysfunctional pain, as described in Dworkin's (1991) research, is defined as illness-behaviour inconsistent with medical findings. With dysfunctional pain, changes occurred in mood, particularly depression, with as-

sociated demoralisation, helplessness, and social isolation. Behavioural characteristics associated with dysfunctional pain included seeking excess medical care, hospitalisations, and medication abuse (Dworkin, 1991). Four concepts were reported to affect this; monitoring of somatic signals, cognitive activity processing these somatic signals, attaching the meaning the emotional and environmental context, and ethnocultural influences that provide this meaning and affect coping responses (Dworkin, 1991). The set of outcomes associated with what Dworkin (1991) labelled “dysfunctional pain” were similar to the outcomes found in the present study. In this study the outcomes have been labelled “dysfunctional chronic pain”. Again, similar to Dworkin’s (1991) research, the present study found that cognitive processing or implicit theories were instrumental influences on these unhelpful, or dysfunctional, outcomes.

Patients with different chronic pain disorders may react differently and should not be treated as a homogeneous population (Schnurr *et al.*, 1990). For example, psychological differences were reported between temporomandibular joint pain, other types of pain, and people with no pain (Schnurr *et al.*, 1990). Patients with fibromyalgia were found to differ from patients with rheumatoid arthritis. Patients with fibromyalgia have increased negative feelings about themselves, are more pre-occupied with their pain, receive additional help from significant others, are increasingly limited in activities, and have higher negativity about employment than patients with rheumatoid arthritis (Gaston-Johansson, Gustafsson, Felldin, & Sanne, 1990). Generally, researchers have examined pain attributed to only one cause, or compared pain caused by two differing illnesses or injuries (eg., Drossman *et al.*, 1988; Gaston-Johansson *et al.*, 1990; Schnurr *et al.*, 1990). However, it is likely that while differences exist in these different pain populations, there are more similarities than differences. The differences may be due to factors other than the causation of the pain. Examples of these factors are given below.

Patients of pain clinics tend to differ from patients with chronic pain who visit their general practitioners and those in chronic pain in the general population (Jensen *et al.*, 1991a). Differences are found in a range of factors including levels of depression, disease conviction, general hypochondriasis, mood difficulties, somatic preoccupation, and acceptance of psychological impact. Pain clinic patients report increased difficulties on all of these variables (Chapman, Sola, & Bonica, 1979; Pilowsky *et al.*, 1977). People with irritable bowel syndrome, who are not actively being treated, have higher coping capacity, experience less life disruption, and show less denial compared with those who are being treated. These factors contribute to an increased level of health-behaviours when compared with irritable bowel patients who are being actively treated (Drossman *et al.*, 1988).

Attribution of cause affects the consequences of chronic pain. Regardless of physical findings, patients who attribute their pain to specific trauma report higher emotional distress, life interference, and pain severity than those who attribute their pain to an insidious or spontaneous onset (Turk & Okifuji, 1996). Interestingly, Bates, Edwards and Anderson’s (1993) findings contradicted part of this. They reported that pain-intensity is not significantly related to diagnosis. They also reported that it is not significantly related to medication or previous treatment for pain.

Culture, age, and gender can also affect responses to chronic pain (Costa Jr. & McCrae, 1985; Seville

& Robinson, 2000). Culture has been reported to have an important influence on perception and response to acute and chronic pain (Bates *et al.*, 1993). Ethnic group and locus of control (which is predicted by ethnic group) have been reported to be the best predictors of pain-intensity (Bates *et al.*, 1993). Thus, pain-intensity may be affected by differences in a person's attitudes, beliefs, and emotional and psychological states, which are associated with ethnicity. It is likely that intense pain affects attitudes, beliefs, and emotions, and it is probable that these in turn affect reported perceptions of pain (Bates *et al.*, 1993). This is confirmed by the current study, which found that implicit theories (or a person's cognitions, attitudes, and beliefs) affected pain and pain status. Health complaints are reported to change with age. Increased levels of health complaints with age are probably due to the person's changing health (Costa Jr. & McCrae, 1985). Gender has also been reported to affect chronic pain and its outcome. Women's adjustment has been related to a higher level of cognitive variables, whereas men's adjustment is related more to social variables (Weir, Browne, Tunks, Gafni, & Roberts, 1996). People, with similar health-care needs, show gender differences in health expenditure. Women use health-care services more. This is partially explained by their greater psychological need and meaning they place on their illness. By contrast, men's health-care usage was explained solely by the meaning they placed on their illness (Weir *et al.*, 1996). This suggests that different assessment and treatment strategies may be required for men and women (Jensen, Nygren, Gamberale, Goldie, & Westerholm, 1994a).

Researchers report that chronic pain patients usually have more than one site of chronic pain, and this was also found in the present study. Other researchers reported that most people experience three to four different types of pain during a year (Sternbach, 1986b). Only 40% of people had pain in only one location (Bruttberg *et al.*, 1989).

The present study, and the literature, have both found that it is important to identify the factors that affect the chronic pain process, and in particular, the factors that affect treatment outcome and disability. It is also important to note that people do not remain static in these factors. Rather, as they progress through their chronic pain experience, their implicit theories and their chosen management strategies will change. This will obviously affect the effectiveness and outcome of these strategies.

4.2.3.2 Health-Professional - Patient Relationships

The participants in this study reported great difficulty in their relationships with health-professionals. This often led them to either not seek consultation, or to seek numerous consultations from many different health-professionals, without fully adhering to any of their treatment suggestions. They also reported many difficulties communicating with health-professionals. This regularly resulted in the participants not fully understanding the treatment or management strategy that was being suggested, and therefore not following or adhering to the treatment.

Most musculoskeletal pain does not become chronic. Those whose pain does become chronic often have multiple tests, see numerous health-professionals, and receive a number of physical and psychological labels. They may also participate in many different treatment procedures (Monsein, 1990). Despite this, Sternbach (1986b) reported that only 3% of people with pain (in general) con-

sulted a pain specialist. As many as 18% of people who rated their pain as severe or unbearable did not consult a health-professional. They reported this was because they did not think the health-professional could assist their pain (Sternbach, 1986b). Mutual agreement between the patient and the health-professional, with respect to practices of treatment, have been related to lower pain-intensity, increased physical ability, and higher treatment satisfaction (Shutty Jr., DeGood, & Tuttle, 1990). Unfortunately, mutual agreement was usually not the process followed with the participants in the present study. This lack of mutual agreement led to a high level of pain-intensity, decreased physical functioning, and low treatment satisfaction.

Pain, disability, and suffering can be seen as challenges to society's goals of success, comfort, speed, and efficiency. People do not usually expect to have to wait for recovery, or suffer from only partial functioning. Pain and its consequences can cause alienation, isolation, and loneliness. These consequences may interfere with treatment and rehabilitation. Effective treatment needs to consider the person holistically (Sturgis, 1988). This point was discussed by many of the participants of the current study. They found that their pain interfered to a large extent in their lives and functioning. As a result, they became increasingly isolated and alienated. This isolation and alienation, in all likelihood, affected their beliefs and thus their choices of, and participation in, treatment. As treatment progressed, it became increasingly obvious to the participants that holistic or multidisciplinary treatment offered greater benefits than specific treatments aimed at a very specific part of their physical body.

In the present study many participants reported feeling misunderstood and powerless when they were told that their pain was all in their head, that it could not be cured, or that they would just have to live with it. In the later stages of their chronic pain process, multidisciplinary treatment was usually readily accepted. Some participants described health-professionals as reinforcing pain-behaviours. This led to decreased functioning. However, this was more commonly attributed to significant others. Arnoff and Feldman (2000) suggest that health-professionals can make one of two mistakes in treating patients. They may dismiss patients by telling them it is all in their head and they will just have to live with it. This leaves the patients feeling helpless, hopeless, and misunderstood. The patient may then escalate their pain. Alternatively, health-professionals may be over-concerned and inadvertently reinforce pain-behaviours. A balance is needed. Pain needs to be fully explained so the patient can understand it and its consequences. It needs to be emphasised that their pain need not be disabling. Return to work should be expected. The patient needs to know that everything that can be done medically will be, or has been, done. Beliefs that rehabilitation will not cause harm and will increase functioning need to be encouraged. Ordinarily, medical assessments and treatments do not do this. This suggests a multidisciplinary approach to rehabilitation is needed (Arnoff & Feldman, 2000).

The health-professional - patient relationship is affected by health-professionals' attitudes to gender, ethnicity, culture, socio-economic status, and sexual orientation, in addition to the expectations and preferences of the patients (Cohen & Bishop, 1995). In particular, gender may affect communication, assessment, hypothesis generation, diagnosis, treatment, and general ideas about health and illness (Cohen & Bishop, 1995). Beliefs are shaped by the social context. Therefore, health-professionals need to identify their beliefs to minimise biases and any associated negative effects (Cohen & Bishop,

1995).

Psychological, psychosocial, and sociocultural factors have a large effect on the health-professional - patient relationship, and therefore chronic pain outcome and disability. Mechanic (1992) states "health is a product of culture and social structure, and derives from the belief systems and patterned activities reinforced by the ways of life of particular cultural communities" (p. 1345). Socio-economic status is related to health outcome; it determines exposure to disease, and shapes health and illness-behaviour. Education is the most important of these socio-economic factors. This is because education is related to many factors including cognitive complexity, conceptual skills, openness and response to information, self-concept, efficacy, and coping style. Education encourages active responses to information. In addition, highly educated people are likely to be in occupations with fewer health risks (Mechanic, 1992).

A link exists between chronic pain and psychological distress (Chew-Graham & May, 1999). Many of the participants in this current study reported believing and feeling they were powerless, out of control, and frustrated. These thoughts and feelings affected their treatment decisions. Their feelings and decisions were possibly related, in part, to their interaction with their health-professionals. The relationship they had with their health-professionals probably affected their psychological and social well-being, as well as their treatment outcome. The literature also discusses this link between health-professionals and psychological and emotional well-being. Differences in the perception of this link between the health-professional and patient can result in mutual frustration, anger, or fear (Trilling & Jaber, 1993). Negative emotional states interact with beliefs about illness to determine when a person will seek help from health-professionals and when they will use their self-management strategies (Friedman & DiMatteo, 1990; Mechanic, 1992).

Somatisation, in stressful situations, is common throughout the world. This is often frustrating to health-professionals. People who are somatising often have psychological difficulties or they are depressed and influenced by the social aspects affecting the expression of depression. The management of depression and other psychological difficulties by health-professionals often determines the future of the illness and resultant disability (Mechanic, 1992). People vary in their sensitivity to body sensations, depending, in part, on learning and situational cues. Introspectiveness is positively related to physical symptoms and depression. It leads to active coping strategies and utilisation of health-professionals' services. The process of symptom appraisal is determined in part by the manner in which the symptoms occur. Those that are intense and painful or unfamiliar, usually lead to a quick consultation or a search to understand their cause. Most symptoms are not referred to health-professionals and are denied, normalised, or given little importance (Mechanic, 1992). This was often how the participants in the present study initially responded to their symptoms, dismissing them as unimportant. This led them not to seek the assistance of health-professionals when this may have been helpful. Later in their chronic pain process, they again mis-interpreted their symptoms as being indicative of further injury and therefore decreased their activities when this may not have been helpful. Health-professionals can help to determine in which category symptoms are best placed. People go through two steps, which may occur at the same time; they monitor their bodies, and they

search for explanations of symptoms (Mechanic, 1992). As Mechanic (1992) suggests, "people's subjective health assessments are among the best predictors of mortality and morbidity" (p. 1348). Some people use illness to excuse failure, exempting people from their usual expectations and assigning them privileges. The sick role may then become a strategic way of coping, although this is not necessarily conscious (Mechanic, 1992). Twemlow, Bradshaw, Coyne, and Lerma (1997) found that chronically ill patients were absent from work more often than general medical patients. They report that these patients have a higher frequency of iatrogenic (treatment related) illness, spend more money on health-care, take higher levels of medication, and see increased numbers of specialists than general medical patients. Despite this, those with chronic illness often feel that medical treatment makes them worse (Twemlow *et al.*, 1997). This fact needs to be addressed by health-professionals.

Patients and health-professionals often differ in their explanations of the cause of pain, and this can cause difficulties. Chew-Graham and May (1999) state that chronic low-back pain is a problem because of a mismatch in the models used to explain its cause. Generally, patients describe their pain in physical terms, whereas health-professionals understand it in psychological terms. This can become a trap with the health-professional colluding with, and not challenging, the patient's explanatory model in order to maintain their relationship with the patient. This, in turn, undermines the relationship and reinforces illness-behaviour, resulting in neither the health-professional nor the patient having confidence in each other. Consequently, both the health-professional and patient come to have low expectations of each other, with a great sense of pessimism, anxiety, and frustration. This is detrimental to the patient and to society in general (Chew-Graham & May, 1999). Trilling and Jaber (1993) explain a similar process, which they call an impasse. This occurs when the health-professional attributes pain to a psychosocial cause, while the patient holds a biomedical explanation. The patient often perceives that the health-professional thinks their pain is "all in their head" and blames the health-professional for not being able to diagnose their physical difficulty. This results in a strained health-professional - patient relationship. Health-professionals face several dilemmas; how to manage the expressed pain, how to identify psychosocial variables that may contribute to continued pain and respond to the patient's view of their pain as biomedical, and how to manage the patient's requests for further assessment and treatment to reduce their pain and their disillusionment with the health-professional system and failing treatments (Chew & May, 1997).

The participants in the current study reported that they had very different interpretations of the cause of their pain from their health-professionals. This did not appear to be discussed by either the health-professionals or the participants when they met. This caused difficulty with adherence to treatment, and in turn with treatment outcome, in addition to disrupting the health-professional - participant relationship, which regularly led to the participants changing health-professionals. These findings are consistent with the literature.

ROLES AND MODELS OF HEALTH-PROFESSIONAL - PATIENT RELATIONSHIPS

In the present study, it seemed that the roles taken by the health-professionals and the participants in the assessment or treatment interaction were not compatible. The participants reported wanting discussion, participation, and communication in their interactions, together with an active role in treatment decisions. The health-professional however, appeared, on the basis of the participants' reports, to expect the participant merely to comply with their suggestions without question. Indeed, the participants usually did not question the health-professional. As a consequence, they did not adhere to the prescribed treatment. They then usually consulted a different health-professional. Further, the participant did not derive much benefit from the untried or inadequately-tried treatment. These different roles are well described in the literature, and are discussed below.

Health-professional - patient relationships vary on a continuum from informative to paternalistic. A paternalistic relationship emphasises the health-professional's authority (Benbassat, Pilpel, & Tidhar, 1998). An inherent power imbalance exists in health-professional - patient relationships (Cohen & Bishop, 1995). The health-professional - patient relationship is a complex one; it is non-equal, often non-voluntary, can be vitally important, emotionally laden, and requires close cooperation (Ong, de Haes, Hoos, & Lammes, 1995). Patients would like health-professionals to take their symptoms seriously, to listen and ask questions, including questioning them about things other than the disease, and to treat them holistically (Arborelius & Bremberg, 1992). It is important that the health-professional is involved, interested, and friendly. The patient needs to feel respected and treated as a person.

A human relationship with the health-professional is very important (Arborelius & Bremberg, 1992). Arborelius and Bremberg (1992) observed that patients often commented on the importance of the health-professional - patient relationship. Positive behaviour involves health-professionals taking illness seriously, treating patients holistically as real people rather than just as patients (Arborelius & Bremberg, 1992). Patients may take an active or passive role in this relationship. Patient passivity is determined by the severity of the patient's condition, and their age, education, and gender (Benbassat *et al.*, 1998). Patterns of health-professional - patient relationships and attitudes to health and illness have been found to affect treatment responses (Twemlow *et al.*, 1997). The participants in the current study generally reported being extremely passive in their interactions with health-professionals, often to their detriment. Later in their management process, they became more active, often with more positive outcomes, particularly with respect to reducing disability.

Several researchers have applied interpersonal relationship models to the health-professional - patient relationship in chronic pain (Chew & May, 1997; Friedman & DiMatteo, 1990; Pierloot, 1983). Friedman and DiMatteo (1990) discussed four different health-professional - patient models. These were the traditional activity-passivity model, the guidance-cooperation model, the mutual participation model, and the health transactions model. The activity-passivity model suggests that the health-professional is active and the patient is passive. The guidance-cooperation model is very similar, the patient is expected to comply with the health-professional's suggestions. In the mutual participation model, both parties are pursuing the same goals of health. There is equal power, the participants are mutually interdependent, they share responsibility, there is mutual dignity and respect, and the

patient has input. This is an open and responsible partnership that Friedman and DiMatteo (1990) state is likely to involve cooperation and health. The health transactions model is similar, but also incorporates the social environment. Responsibility is shared and no fault is assigned if difficulties are encountered, for they are expected. These difficulties are discussed, and a treatment programme is designed which the patient can follow. This treatment programme fits with the patient's social, psychological, economic, and cultural situation (Friedman & DiMatteo, 1990).

Pierloot (1983) also discussed four models of health-professional - patient interaction; the communication model, the socio-cultural model, the medical transference model, and the model of human encounter. The communication model suggests a continuous exchange of information. The patient offers complaints and information, while the health-professional accepts or neglects this information and replies with questions, explanations, and directives for treatment. This is a circular process, with each party trying to influence the interaction as determined by their individual expectations. This interaction involves verbal and non-verbal messages, speech, movement, appearance, and context. Difficulties are thought to arise when words have different meanings for each of the participants. Health-professionals often use medical terms that patients do not understand. Selective memory processes also affect the retention of information. Information that is presented first, and the information to which the patient attaches the most importance, is most likely to be remembered. The greater the patient's medical knowledge, the better their memory for the information. Each participant in the communication plays a role. For the communication to proceed successfully, the health-professional and the patient need to take complementary roles. The health-professionals' attitude can be described as: "bureaucratic and task-orientated", where they ask questions and pay little attention to the patient's feelings; "insecure and detailed", with long detailed unhelpful interviews; "self-assured", where they are sensitive, but not patient-orientated; and "amiable and person-orientated", where they express empathy and recognise a wide range of factors involved in the patient's presentation. Patients are classified as: a "matter-of-fact collaborator", where they answer the questions asked; "vague or difficult to pin down", with very detailed answers which lack precision; "pleasantly collaborative", spontaneous and positive; and "miscellaneous", a mixed interaction style. Different pairings provide different levels of satisfaction and outcomes. The descriptions the participants in the current study provided placed their health-professionals and themselves in several of these categories. Different health-professionals fell into different categories, and many of the participant changed categories over time. The main difficulties seemed to be when the categories that the health-professional and the participant were in were not complementary.

The socio-cultural model suggests that interactions are regulated by cultural standards. The social role of the health-professional is one of authority and devotion. The social role of the patient is ambiguous. However, being ill excludes the person from a normal social life. It also gives them the right to some social privileges. The patient is dependent on the health-professional (Pierloot, 1983). Different socio-economic classes are treated differently by health-professionals and receive different treatment. For example, lower socio-economic status patients receive more drugs, whereas higher socio-economic status patients receive more psychotherapy (Pierloot, 1983). Older patients are seen to have increased levels of illness, but they are less treatable. Health-professionals prefer to treat

younger patients, but develop better relationships with same age patients, who are more likely to stay in treatment (Pierloot, 1983).

The medical transference model suggests that the health-professional has authority, power, and devotion. It predicts stereotyped meetings between the participants. The patient's feelings are tolerated by the health-professional but not reciprocated. The model suggests that the visit to the health-professional is a threatening experience for the patient because they are ill. For the health-professional, it suggests that they view the patient as someone in danger who is asking for help. The interaction could have dire consequences, compromising the health-professional's reputation, consequently, the interaction is threatening for them also. Thus this is the interaction of two threatened people. This model introduces the issues of transference and counter transference (Pierloot, 1983).

Finally, there is the model of human encounter. This model suggests that the relationship should include the ability to express feelings; a positive attitude, including respect, acceptance, and concern; and that the encounter should be person rather than patient-orientated. It suggests that the increase in positive feelings towards the self and others increases general physical and psychological functioning. This relationship can work only if health-professionals transcend their medical attitude and base their relationship on the common needs and worries of the patient (Pierloot, 1983).

These models of health-professional - patient interactions provide a structure upon which health-professional - patient relationships can be based and examined. Some of the models provide rules under which the health-professional - patient interaction "should" occur. These may be useful if all participants are operating under the same "rules" and have the same expectations of the encounter. However, with the participants of this present study, it did not appear that this was the case. The participants' actual experience was different from their expectations of, and hopes for, the encounter with the health-professional.

Chronic pain patients and health-professionals often negotiate from conflicting roles. The patients have a great deal invested in health-professionals, as they re-organise their self-identity, relationships, and occupation. They therefore depend on health-professionals to understand their pain (Chew & May, 1997). The health-professional - patient relationship is heavily structured, with routines that minimise patient involvement. The health-professional is consequently in a powerful position (Calnan, 1984). Historically, medicine has been driven by neutrality and clinical detachment, involving a lack of empathy (Frankel, 1995). It has been suggested that it may be useful for health-professionals to see the consultation as a social event (Chew & May, 1997). Calnan (1984) reported that the health-professional - patient relationship is different for chronic pain and illness patients than in other medical practice. Most patients with chronic conditions understand medical practice more. Patients with these chronic conditions challenge their health-professionals; they are critical of medical practice (Calnan, 1984). Those with chronic conditions perceive health-professionals' motivations differently than general medical patients. Chronic patients suggested that power and money were motivators for the behaviour of health-professionals (Twemlow *et al.*, 1997).

Ong *et al.* (1995) described some health-professionals as highly controlling. These health-professionals have also been described as paternalistic. Such health-professionals have been found to be unhelpful

in chronic pain resolution. Ideally, the health-professional would discuss the diagnosis and treatment with the patient. This should include the expected results and possible risks of treatment. This discussion can then allow a joint decision to be made. If the management does not go as expected, the patient can again take an active role to manage their situation with the support of the health-professional (Friedman & DiMatteo, 1990). The health-professional is a therapeutic agent, in addition to supplying therapy. The way that the health-professional - patient interaction proceeds can be, at least partially, related to the patient's health status (Friedman & DiMatteo, 1990).

Patients, health-professionals, and researchers have different ideas about the health-professional - patient relationship (Ong *et al.*, 1995). Different types of health-professionals and patients exist. Their different characteristics have a large impact on the health-professional - patient relationship, and communication. Further, different illnesses possess different requirements (Ong *et al.*, 1995). Health-professionals can be divided into two categories: "instrumental", or task/cure-focused; and "affective" or care-focused. It has customarily been thought that health-professionals are expected to cure their patients. However, this is difficult with chronic illnesses, especially those which are poorly defined, and have no clear cause or treatment (Twemlow *et al.*, 1997). As a result of chronic pain often having no obvious "cure", the relationship between health-professionals and patients needs to be different with more collaboration and interaction.

HEALTH-PROFESSIONAL COMMUNICATION

The participants in this study regularly reported communication difficulties with their health-professionals, this appeared to be an important variable in their chronic pain experience. This had long standing effects on the treatment and management of their chronic pain. Inappropriate treatment was often attempted due to a lack of understanding. Often the participants reported not getting their questions answered. It is suggested that this is a result of a difficulty with the interaction of the health-professional's and the participant's communication styles. It did appear, from the participants' reports, that very few of the health-professionals engaged in what the literature suggests is effective medical communication procedures. In order to prevent, and effectively treat, chronic pain, it is essential that there is effective communication between health-professionals and patients. There is much that both health-professionals and patients can do to assist this process. These factors are summarised below.

Patients and health-professionals disagree on the importance of communication. The information needs of patients tend to be underestimated by health-professionals. Health-professionals poorly predict their patients' preferences. Over time, the recognition of patients' rights to be kept informed has increased, although there is still a great deal of variability in the communication style of health-professionals (Benbassat *et al.*, 1998). Most patients want to know as much as possible about their illnesses. Studies have shown that 77% to 92% of patients want to be informed about their illness and many desire to be involved in its management, while a minority prefer to remain passive in their illness management (Benbassat *et al.*, 1998; Ley, 1977). It is common for health-professionals to believe that their patients should not be kept informed. Ley (1977) reported that 69% to 90% of doctors thought that patients should not be told of a serious illness. Although, it is possible that these figures

have changed somewhat over the past 25 years, a difference of views still exists between patients and health-professionals. Health-professionals are often not aware of their patients' information needs. Sharing of information is not common practice, as illustrated by recent research (Benbassat *et al.*, 1998; Verhaak & van Busschbach, 1988). Research has also shown that patients want to know about risks and alternative treatments (Benbassat *et al.*, 1998). Despite this, health-professionals underestimate the amount of information that patients desire (Noble, 1998). Ley (1977) reported that 31% to 54% of patients stated that doctors did not inform them enough. Over the years this proportion has changed little (Ong *et al.*, 1995). This is concisely summarised by several authors. Benbassat *et al.* (1998) states that: "the ability to communicate health-related information and to determine the patients' desire to participate in medical decisions should be viewed as a basic clinical skill" (p. 81). Similarly, Ong *et al.* (1995) claimed that: "communication can be seen as the main ingredient in medical care" (p. 903). Fitzpatrick, Edgar, and Freimuth (1992) also suggest that communication is very important. The participants in the present study reported that health-professionals generally did not consult with, or educate them, in regards to their pain and its causes, or about the availability of different treatments and their risks. Many participants reported that they did not properly understand their health-professionals recommendations for the treatment that they were expected to follow, or the treatment options, nor did they generally understand the reasons behind their treatment or their pain.

McKinlay (1987) identified barriers to communication with health-professionals. He suggested that health-professionals do not communicate for several reasons: because they are used to meeting on a strictly instrumental, cure orientated basis; they do not want, or think they need to deal with negative reactions from patients; they believe that if patients were not given information, they would not experience an emotional reaction, and this could interfere with their treatment progress; and patients may discover health-professional error or incompetence if they are given information. These barriers appear to have more to do with the needs of health-professionals than the well-being of the patients (McKinlay, 1987). Further reasons stated by health-professionals for a lack of information exchange are a lack of time, that the patient did not ask for information, the health-professional's belief that the patient did not want to know, and assumptions that others had already told the patient (Ley, 1977). The emphasis needs to change from "cure" to "care" (Verhaak & van Busschbach, 1988). Throughout the world there is a growing trend towards open communication between health-professionals and patients (Ong *et al.*, 1995).

Communication does affect treatment outcome. As Ong *et al.* (1995) has summarised, "background variables seem to influence communicative behaviours, these behaviours in their turn have an effect on patient outcomes" (p. 915). Patients who ask questions, consider treatment options, and discuss their preferences, have better health outcomes (Benbassat *et al.*, 1998). Explanation of symptoms has been claimed to be important for patients with low-back pain. This needs to be acknowledged and addressed by health-professionals (Deyo & Diehl, 1986). Health-professionals often state that due to the patient's personality, some patients will complain regardless of the efforts they make. However, differences have not been found in the personality of patients who were satisfied and those who were not. Patients who complain about poor communication are not necessarily dissatisfied in general (Ley, 1977). The participants in the present study were often dissatisfied with a great deal of their health-

professional treatment. They did report being satisfied about some of their treatment. For example, they appeared to be more satisfied with multidisciplinary treatment. This is probably because they provided more input into this management and were more actively involved with it.

Ong *et al.* (1995) suggests that there are three different purposes for communication in the health setting; first, creating an interpersonal relationship, second, exchanging information, and third, making decisions about treatment. For effective consultation, there needs to be mutual trust, empathy, respect, genuineness, unconditional acceptance, and warmth. Relationships between health-professionals and patients need to enable patients to express all their feelings, thoughts, and expectations, in addition to their symptoms, and all of their reasons for attending the consultation (Ong *et al.*, 1995). For effective exchange of information it is important for both the health-professional and the patient to know and understand about their difficulty, its causes and management options, and to feel known and understood about their experiences and beliefs. Therefore, the exchange of information needs to alternate between information-giving and information-seeking. They should try to understand their patient's perceptions, feelings, and expectations of their illness, and provide education (Ong *et al.*, 1995). Once a relationship has developed, and an exchange of information has taken place, the next step is to decide on the most appropriate medical or individual practice (Ong *et al.*, 1995). The participants in the current study reported being keen to be given as much information as they could, and to be involved with decision-making. A lack of information and participation appeared to be one of the major causes of the participants' dissatisfaction with health-professionals.

Health-professional - patient communication style has been shown to have a range of effects. It affects the questions the patient asks, the treatment they seek and receive, the satisfaction and emotions they feel, their understanding, and their adherence to treatment. These all impact on treatment outcome. For example, research has shown that people who do not think that they receive adequate explanations request additional tests, are increasingly worried about serious illness, and are less satisfied with their health-professional (Deyo & Diehl, 1986). The frequency of patient questioning depends upon the degree of the health-professional's information giving (Ong *et al.*, 1995). Ong, *et al.*'s (1995) study reported that 26%-39% of patients were dissatisfied with the information they received. Lack of information leads patients to explore alternative treatments (Ong *et al.*, 1995). To be able to cooperate, the patient needs to have some understanding of their illness and the treatment proposed. The nature of the information and how, when, and by whom it is given, is related to treatment outcome (McKinlay, 1987). Lack of information is related to psychological difficulties particularly anxiety, depression, and difficulties with coping (Ong *et al.*, 1995). Health-professional - patient communication has been shown to influence outcome, including adherence, patient knowledge, satisfaction, physical functioning, and health status (Noble, 1998). No evidence exists that giving information is harmful. Despite this, patients often lack basic information, they are only given part of the information, or the information they are given is distorted (Noble, 1998). Consistent with the above documented research, the participants in the present study, who did not understand the cause of their pain, continually sought additional tests, despite consecutive negative results. They were concerned that they might have a serious and progressive illness and reported little trust of or respect in their health-professionals. The

participants who reported feeling misunderstood, or that they did not receive information from their health-professionals, often changed health-professional without obtaining much benefit from their treatment. Nearly all of the participants were dissatisfied with the information they received from health-professionals.

Non-verbal behaviour is also important. Patients are very sensitive to this type of communication. Pain involves fear and anxiety, and thus, patients vigilantly seek additional cues on which to base their understanding. Patients sometimes see inconsistencies between verbal and non-verbal communication as a lack of genuineness (Ong *et al.*, 1995). Health-professionals' information-giving is particularly related to patient satisfaction and affective behaviours. Using the patient's first name, establishing privacy, identifying future assessment and treatment, allowing full patient expression, and interview length are all positively-related to satisfaction. Related to this is that fact that health-professional dominance is related to decreased satisfaction.

Information given to patients by health-professionals is limited. In general, health-professionals spend very little time giving information to patients. They ask the majority of questions. These are usually closed rather than open. Topics about the emotional state of the patient are rarely discussed (Ong *et al.*, 1995). Verhaak and van Busschbach (1988) reported that it was unusual for a real explanation given to a patient. Health-professionals do not generally inform their patients of their findings or encourage questions (Verhaak & van Busschbach, 1988). Results published in Verhaak and van Busschbach's (1988) study indicate that in 7% of cases health-professionals gave basic information about illness, explanation of medication was given in 78% of cases, and in 15% of cases lifestyle was discussed. Ley (1977) found that the patient communicated only 65% of their expectations and 24% of their worries to their health-professional. Ley (1977) proposed that a patient might present with symptoms, which are in fact a cover for an underlying problem, and that if this underlying difficulty is not addressed, the patient will not be satisfied. This claim is supported by the fact that patients often do not tell the health-professional of all their concerns. If their concerns are not dealt with, they are most likely to be dissatisfied, even if they have not shared these concerns. This has been called the psychodynamic hypothesis (Ley, 1977). These findings are ten to twenty-five years old and it is possible that health-professional behaviour may have changed over this time. However, the participants in the current study often reported that they were unable to tell their health-professionals of their concerns or worries and that these concerns and some of their symptoms were not addressed. This often led to the participants changing health-professionals.

For communication to be effective, it needs to be understood and remembered. Communication often fails when the patient does not understand or remember information they are told by a health-professional. This effects between 7% and 80% of patients (Ong *et al.*, 1995). This large range results from a number of factors; the information being too difficult, the patient not having medical knowledge or an understanding of medical language, pre-existing misconceptions about illness and its treatment, and anxiety (Ley, 1977; Noble, 1998; Ong *et al.*, 1995). Understanding is also related to physical closeness (e.g., the health-professional leaning forward), the amount of time spent giving information, and the amount of information given. These are the health-professional's information-

giving behaviours (Ong *et al.*, 1995). The duration of the consultation, in addition to patient questioning, has been reported to be the best predictor of the amount of information given (Verhaak & van Busschbach, 1988). Communication depends on both the patient and the health-professional. Relevant patient characteristics include their physical ability to hear the information, their psychological ability to receive information, their anxieties and fears, their memory, what they already know about their illness, their social and ethnic group, and their expectations (McKinlay, 1987). Health-professionals should check that their patients understand the information they are being given. Memory and understanding play a large part in satisfaction and adherence with treatment. This has been labelled the cognitive hypothesis (Ley, 1977). Effective communication can be increased by the health-professional giving instructions in clear and appropriate language, and by a display of interest and concern for the patient (Noble, 1998; Verhaak & van Busschbach, 1988). The literature just reported is consistent with the information provided by the participants of the present study. They reported not being given, not understanding, and not remembering information given by health-professionals. This lack of information often led to them not adhering appropriately to treatment. They described their lack of understanding as causing further pain and disability.

Patient recall can be improved by providing the instructions at the start of the information, stressing the importance of the instructions, repeating important information, using short words and sentences, structuring the information, and making it as specific and detailed as possible (Noble, 1998). To ensure information needs are met, a number of steps can be followed; the patient expresses all their concerns, these are discussed, the health-professional and patient discuss theories of the disease and symptoms, the health-professional and patient discuss goals for treatment, treatment goals are decided, the health-professional and patient discuss theories of treatment, possible barriers are identified and discussed, plans are made to overcome barriers, and finally the health-professional provides written information on the above for the patient to keep (Noble, 1998).

Ley (1977) found that unexplained medical jargon is used in over half of the consultations, and that health-professionals frequently ignore questions by patients. To improve health-professional-patient communication, Ley (1977) suggested that health-professionals discuss their patient's worries, concerns, and expectations and other non-medical factors, provide information without using medical jargon, and be friendly rather than businesslike. Health-professionals consistently greatly underestimate the comprehension of lower-working-class patients (McKinlay, 1987). Communication processes and practices are clearly important.

Improved health outcome has been found in many studies to be related to higher patient and lower health-professional controlling behaviours (e.g., questions), higher levels of affect (particularly negative affect), enhanced information giving (especially in response to information-seeking), higher patient security, and increased empathy (Ong *et al.*, 1995; Noble, 1998; Wilmer, 1968). Outcome can also be improved if health-professionals address their patients' concerns and worries. Unfortunately, these are rarely identified or discussed, and health-professionals focus almost entirely on assessing biomedical factors (Noble, 1998). As Noble (1998) clearly states: "the manner in which the health-professional elicits information from the patient at the beginning of the consultation can

determine the eventual outcome” (p. 62). The health-professional manner relates to the quality of the information. For example, if an interruption stops the spontaneous flow of information that is never regained, the health-professional will not obtain the full information. If the health-professional does not obtain all the information, the patient often feels that the diagnosis and treatment are likely to be inappropriate, and this lowers adherence (Noble, 1998). The health-professional-patient relationship may also act as a form of social support. It may increase the person’s self-confidence, motivation, and improve their view of their health status. It may therefore affect health outcome (Ong *et al.*, 1995). As Friedman and DiMatteo (1990) so clearly state: “cooperation with treatment regimens is more likely when patients believe they are susceptible to serious disease, trust in the efficacy of the treatment, and believe treatment benefits outweigh the costs. Thus education plays a role, but it is not the most important factor. Rather, cooperation is most likely when patients have clear, open communication with physicians who provide understandable, sensible explanations to them, when physicians enlist patients’ motivation to heal themselves, and when physicians prescribe regimens compatible with patients’ social and cultural norms” (p. 98). An effective health-professional - patient relationship is essential for the best possible treatment outcome (Friedman & DiMatteo, 1990). Most participants in this study reported wanting their health-professionals to spend more time listening to them, explaining their illness, and the treatment that they were to engage in. In particular, they wanted to be involved in an interactive, consultative process where they could have input into treatment decisions. However, the participants reported that effective communication with health-professionals was rare. Lack of good communication and feeling misunderstood were major reasons given for changing health-professionals.

RESULTS OF STRAINED RELATIONSHIPS

The participants in the present study found many of their relationships with health-professionals were difficult and strained. They saw many health-professionals and repeatedly moved from one health-professional to another when they felt misunderstood or not heard. They were generally not active participants in their pain management process. Similar outcomes have been described in the literature summarised below.

A strained health-professional-patient relationship can have many negative results, for both the health-professional and the patient. It can result in: non adherence to treatment, leading to the treatment being unsuccessful; over-utilisation of health-professionals; rapid changes in health-professional; repetitive testing; time and resource wasting, including repeated consultations and history taking; health-professional fear of litigation, leading to unnecessary tests; and health-professional burnout (Friedman & DiMatteo, 1990; Trilling & Jaber, 1993). Health-professional empathy is positively-related to patient satisfaction, adherence, and positive outcome. It is negatively-related to malpractice litigation (Frankel, 1995). Twemlow *et al.* (1997) reported that people with chronic illnesses felt less accepted and less understood by their health-professionals. They exhibited a strong negative attitude towards health-professionals. If health-professionals do not provide emotional care, reassurance, and information, ill patients can feel abandoned. When this happens, they are likely to reject the care of their health-professional and seek treatment from another health-professional (Friedman & DiMatteo,

1990). Managing these situations, so that they result in beneficial consequences, requires two types of change; training for health-professionals, and training for patients to be more active. Increased participation includes greater discussion, negotiation, and compromise (Noble, 1998). These are issues which continue to need addressing in the chronic pain area.

SATISFACTION WITH TREATMENT

The majority of the participants of this study were dissatisfied with most of their treatment. In addition, they sought treatment from many different health-professionals. They described being discounted by health-professionals and not obtaining or understanding enough information from their health-professionals. This had a negative impact on the treatment and the outcome of their chronic pain and disability. This is consistent with the literature described below on treatment satisfaction.

Patient satisfaction is an important measure of outcome. Significant correlations have been found between satisfaction and medication compliance, self-rated improvement, and less desire for additional testing. No relationship has been shown between length of health-professional visit and satisfaction (Deyo & Diehl, 1986). Patient satisfaction increases when health-professionals use the patient's first name (Twemlow *et al.*, 1997). Patient's expectations have an impact on satisfaction. Those who expect warmth, concern, and respect are increasingly dissatisfied. Autonomous patients who desire answers to their questions are also less satisfied. Those who expect impersonal treatment are more accepting of time-pressured technological treatment (Twemlow *et al.*, 1997). Patients are dissatisfied with the information given to them by health-professionals (Noble, 1998). Patients have high expectations of receiving information. They are satisfied if the information is brief and jargon-free (Deyo & Diehl, 1986). Patients are often not satisfied with the health-professional's behaviour (Arborelius & Bremberg, 1992). This is partially linked to the fact that health-professionals are poor estimators of health status. In particular, they underestimate functional limitations, which lowers patient satisfaction (Noble, 1998). Chronically-ill patients display lower satisfaction than patients in general. In the study by Twemlow *et al.* (1997), 75% of chronically ill patients expressed satisfaction with their health-professionals compared with 92% of general medical patients. The participants in the present study were generally extremely dissatisfied with their interactions with health-professionals. This was particularly related to communication difficulties, particularly a lack of consultation and discussion. They also became frustrated when their health-professionals' predictions did not eventuate. This is consistent with the above literature.

Treatment satisfaction has been negatively correlated with depression and the number of health-professionals consulted (Arnoff & Feldman, 2000). Arnoff and Feldman (2000) reported what could have been a summary of the feelings, beliefs and behaviours of the participants in the present study when they said: "feeling disbelieved or discounted, patients will often go from one physician to the next looking for the one who 'will have the answer'" (p. 162). Factors that influence whether a person will seek help are the person's psychological and emotional state, their past experiences, mood and anxiety about anticipated consequences, and health-professionals' characteristics and behaviour (Arborelius & Bremberg, 1992; Fordyce, 1994; Noble, 1998; Ong *et al.*, 1995).

COMPLIANCE/ADHERENCE TO TREATMENT

Most of the participants in the present study did not adhere to treatment. This was often because they did not fully understand the treatment that was being suggested. If they did understand what was required of them, they sometimes did not adhere because the treatment clashed with their values, perceptions of their illness, or expectations of treatment. These reasons were not discussed with their health-professionals. Instead they simply did not adhere with treatment, or only adhered to a very limited degree. This often resulted in the participant seeking alternative treatment options from different health-professionals and continuing the non-adhering behaviour. This behaviour is consistent with compliance/adherence literature, which is discussed below.

Between 30% and 50% of patients have been found by researchers not comply with treatment (Friedman & DiMatteo, 1990; Ong *et al.*, 1995). Non-compliance can be dangerous to patients and wastes medical resources (Friedman & DiMatteo, 1990). "Compliance" and "adherence" are two terms often used with regard to treatment. Patient compliance is the extent to which the patient's behaviour coincides with health-professional advice. It assumes that health-professional advice is the best option for the patient. However, health-professionals often fail to adhere to accepted treatment guidelines, so this may not always be the case. In addition, and as noted above, patients may not receive the most appropriate treatment due to poor communication (Noble, 1998). Compliance indicates a passive one-sided relationship. Adherence is little better. It also suggests a one-sided relationship with significant focus on the patient "adhering" to the health-professional's suggestions (Friedman & DiMatteo, 1990). "Compliance" is the term that is often used, although use of the term "adherence" is becoming increasingly popular (Noble, 1998). Adherence and compliance both assume the patient is in a passive, obedient relationship with their health-professional. They do not provide for cooperation (Noble, 1998). Cooperation involves the health-professional and the patient working together (Friedman & DiMatteo, 1990). Neither treatment-adherence or treatment-compliance are dichotomous. Patients tend to modify or distort treatment suggestions instead of completely accepting or rejecting them. This maybe intentional, based on their belief structure or implicit theories, or it may be due to a misunderstanding (Noble, 1998). A positive relationship exists between adherence and health outcome, however, this is not a perfect relationship. Even if there is an ideal situation, with accurate assessment and treatment, a positive outcome cannot be guaranteed (Noble, 1998). The participants in the present study were only partially compliant with their suggested treatment.

Several models have been proposed to account for compliance or adherence. First, there is the locus of control model, this is related to social learning theory. This model suggests that adherence is increased if a person's locus of control matches the situation they are in. It suggests that the health-professional's approach should be adaptable depending on the particular patient's locus of control (Noble, 1998). Secondly, the stages-of-change model suggests five stages exist which effect the change of behaviour. Treatment should vary depending on the stage the person is at. People can move backwards and forwards between these stages. Motivational interviewing is used to make positive changes. The five stages are precontemplative, contemplative, preparation, action, and maintenance (Prochaska & DiClemente, 1983). The third model, the self-regulation model, views the patient as an active

problem-solver. They assess their health threat, their action plan, and how effective their coping is and adjust their behaviour according to their perceptions (Noble, 1998). The sociobehavioural compliance model is the fourth model. This model proposes that behaviour is the result of motivation to achieve success and/or avoid failure. Behaviour is affected by the value of the goals and the perceived likelihood of a successful outcome (Ley, 1977). Finally there is the health belief model. This suggests that a person's motivation regarding adherence and readiness for action is determined by the perceived vulnerability and severity of their illness, the costs and benefits of behaviour, their perceived self-efficacy, and whether there is a cue for action (Ley, 1977; Noble, 1998). Consistent with some of these models, studies have shown that perceived susceptibility is related to compliance (Ley, 1977). There is no strong relationship between the perceptions of health-professionals and lay people with respect to illness and compliance. However, there is a significant relationship between the perceptions of patients and health-professionals with respect to illness and compliance, and the costs and benefits of compliance (Ley, 1977). The health belief model accounts for much of the compliance literature (Ley, 1977).

Non-adherence is related to unmet expectations for information about treatment, and misconceived beliefs about illness and treatment. However, these are rarely discussed in a health-professional setting (Noble, 1998). Patients' beliefs about their illness and appropriate treatment are often very different from those of their health-professionals. These beliefs are thought to have a large impact on treatment adherence. Unfortunately, these beliefs are very rarely explored in a medical environment (Noble, 1998). Health-professionals need to assess both a person's factual knowledge and their beliefs. This may help in identifying people who are at risk of not adhering to a particular treatment (Shutty Jr. & DeGood, 1990; Williams & Keefe, 1991). This would allow modifications to be made to the treatment being offered or education could be used to modify beliefs or implicit theories. Factors associated with adherence are: the patient's perceived susceptibility; their attitudes, beliefs, and knowledge; the severity of their pain; treatment complexity; the amount of behavioural change needed, and the duration of this change; therapeutic source, efficiency, and convenience; health-professional - patient supervision, including satisfaction, adequate explanation, and agreement or rejection of this; the patient's beliefs, expectations, and previous compliance; and family stability (Hellenbrand, 1983). Demographic variables have not been found to impact on adherence (Hellenbrand, 1983). Adherence is lower when: unresolved tension exists, the health-professional does not provide feedback to questions, the health-professional expresses negative emotion, and when the health-professional is passive when confronted with an active patient. Adherence is higher when the health-professional is: seen as friendly rather than businesslike; makes statements indicating positive affect; is emotionally supportive, reassuring, and encouraging; treats the patient as an equal; can identify the patient's emotions; is sensitive to non-verbal communication; and is non-verbally expressive. It has also been related to patient participation and opportunities to voluntarily offer information (Ley, 1977; Noble, 1998). The length of interaction and the proportion of questions asked by the health-professional are also related to adherence, as is the amount of non-medical communication (Ley, 1977). A strong correlation has been found between patient satisfaction and adherence. Satisfaction is related to the fulfilment of expectations. Conversely, fulfilment of expectations is only

weakly related to adherence (Ley, 1977). The participants in the present study often reported having strong views about the cause of their pain and the treatment that they desired. However, they were rarely able to communicate these to their health-professionals. They often reported not understanding the proposed treatment, or how or why they were to implement it.

Developing health-professional - patient relationships, where patients are active participants and their beliefs and expectations are explored, can increase adherence (Noble, 1998). Discussion of adherence also affects the levels of adherence. The manner in which adherence is discussed is also important (Noble, 1998). When difficulties with adherence arise, health-professionals first need to identify where the problem lies, before attempting to address it (Noble, 1998). What is termed "lack of co-operation" could easily be a lack of understanding. Alternatively, while the patient may understand what is required of them, they may not be sufficiently motivated to engage in the treatment. An ideal health-professional-patient relationship can be achieved by addressing both understanding and motivation (Friedman & DiMatteo, 1990). As Noble (1998) says: "it is probably more helpful to construe adherence as a behaviour which results only when a particular set of circumstances arises. These will include: that the patient wishes to undertake treatment; is satisfied that the treatment being offered is the most appropriate course of action; can fully understand and is able to undertake the behaviours required; is not impeded in any way during the course of the behaviour and is able to monitor progress towards the end goal" (p. 72). It is probable that these factors reduce the likelihood of the development and maintenance of chronic pain and disability. The participants in the current study reported very little exploration of their expectations and implicit theories by health-professionals. They appeared to lack both the understanding and the motivation to adhere to treatment suggested by health-professionals.

It is useful to view chronic pain in a broad context involving the individual, their family, the workplace, and wider society. When pain becomes chronic, all of these systems become reorganised around the illness. It may evolve to the point that the stability of the family system becomes dependent on the maintenance of pain, as a result of the secondary and tertiary gains. Consequently, the patient is unable to comply with treatment to reach a successful outcome. This can lead to frustration when the health-professional sees the patient as being non-adherent, and the patient sees the health-professional as someone they have difficulty communicating with (Trilling & Jaber, 1993). Wider systemic issues may need to be addressed when considering chronic pain patients' adherence to treatment. Indeed, in this current study, the participants' pain was a major disruptive influence to their lives and the roles that they played. This was particularly true of interpersonal and occupational roles. The participants reported that health-professionals did not account for these changes and the influence that they might have had.

Most health-professionals blamed the patient for non-adherence and generally over-estimated adherence. However, research shows that aspects of adherence are related to health-professional behaviour (Noble, 1998; Ong *et al.*, 1995). Effective communication promotes cooperation from the patient (Arborelius & Bremberg, 1992). The self-report of adherence by patients to health-professionals about their advice is unreliable (Noble, 1998). This could be because the patient desires to avoid conflict

(Noble, 1998). Non-adherence has wider implications than merely preventing treatment that might help the patient's condition. It also affects the health-professional - patient relationship. Both the patient and the health-professional may feel threatened by non-adherence. Health-professionals find non-adherence frustrating, and commonly threaten patients with dire consequences or use authoritarian tactics (Noble, 1998). They also try to minimise the patient's interference with treatment. To reach this end they may use forceful persuasion. Health-professionals very rarely tried to understand why the patient was not adhering with treatment (Noble, 1998). This is consistent with the descriptions given by the participants in the current study. They did not report informing their health-professionals of their non-adherence, nor did they describe health-professionals asking about their non-adherence or reasons for it. Instead they described reacting against authoritarian persuasion to adhere to treatment. This reduced their subsequent adherence.

4.2.3.3 Psychological Factors

The participants in the present study reported many of psychological variables as affecting their experience of chronic pain, particularly negative emotions. It is well known that psychological states affect beliefs. They are likely to affect beliefs that are related to pain and therefore pain reactions and the seeking of, adherence, and reaction, to treatment. These factors are discussed in the literature and reviewed below.

Psychological factors affect mood and medication use, in addition to pain intensity and functioning. Much of the variability in pain intensity is predicted by the patient's anxiety, depression, previous pain, medication beliefs, education, and extroversion (Taenzer, Melzack, & Jeans, 1986).

In most cases, biomedical factors initiate pain. As time progresses, psychological and behavioural factors may have a larger impact on levels of pain, adjustment, and disability. Traditional medicine has tended to view pain dichotomously, as either physical or psychological in nature (Turk, 1996b). This is clearly not the case. As Turk (1996a) has stated: "psychological factors may act directly on pain and disability by reducing physical activity and consequently reducing muscle flexibility, strength, tone and endurance. Fear of re-injury, fear of loss of disability compensation, and job dissatisfaction can also influence return to work" (p. 95).

The difference in individual responses to painful stimuli, and treatment for pain, can be understood in the context of pain as a personal experience which is influenced by psychological factors. These include learning, interpretation of the situation, emotion, attentional focus, feelings of control, coping strategies, and contingencies of reinforcement. These factors can trigger, exacerbate, and maintain pain, although they do not usually cause it. The factors also contribute to distress and disability (Turk & Meichenbaum, 1994). Pain is multidimensional and complex. It includes affective and sensory aspects including spatial, temporal, and qualitative information. Pain is intrinsically aversive. It causes many related symptoms such as fatigue, sleep disturbance, physical dysfunction, emotional distress, and decreased concentration. It hampers basic activities such as dressing, washing, reading, and socialising. Relief from pain can remove other symptoms and increase activity (Chapman & Garvin, 1993). Sensory mechanisms of pain include a signal from nociceptors, which gives rise to

sensory, cognitive, and affective processing. Similar trauma can be related to different patterns of pain in different people. Also, the same person can show different patterns of pain over time when the causal mechanism does not appear to change (Chapman & Garvin, 1993). Turk (1996a) states this clearly: "pain is a personal experience influenced by attention, anxiety, prior learning history, the meaning of the situation, and other physiological and environmental factors, as well as physical pathology" (p. 91).

4.2.3.4 Implicit Theories

Cognitions, beliefs, and attitudes were observed to have a large impact on the management and outcome of chronic pain and disability in this study. In particular, the implicit theories affected the choice of strategy used to manage the participant's chronic pain. These implicit theories were modified over time, and were also related to the participant's position in the chronic pain process. Health-professional styles, discussed in section 4.2.3.2, and significant others styles, discussed in section 4.2.3.5, also affected the choice of strategy. The function of cognitive factors has been demonstrated in the literature, which will be reviewed in this section.

Cognitive variables, both situation-specific and general, are highly related to pain and disability. They have been reported to have a greater influence on pain and disability than disease-related variables. In a study by Flor and Turk (1988), situation-specific and general cognitive variables accounted for 32%-60% of variance in pain and disability. Disease-related variables added very little to this variance. These findings confirm the findings of the present study, that implicit theories are particularly important in the chronic pain process.

4.2.3.4.1 COGNITIVE MODELS

Currently no generalised cognitive model of illness or chronic pain-behaviour exists. Recently social-cognitive models of normal illness-behaviour have been developed (Williams, 1997). One such recent model of dysfunctional illness-behaviour includes the patient's beliefs about their illness; their other beliefs, particularly about themselves, others and the world; and interaction of illness and other beliefs, which have meaning for the person. This is called the "illness belief triad" (Williams, 1997).

4.2.3.4.2 BELIEFS AND IMPLICIT THEORIES

Unhelpful beliefs expressed by the participants in this study did not include any one common belief for all of the participants. Rather, sets of beliefs relating to pain were given either too much or too little emphasis in the person's life. Alternatively, the beliefs appeared to be unhelpful in specific situations. That is, the pain's importance was out of proportion with the rest of the person's life. Another difficulty reported by the participants was the rigidity with which they held their beliefs. This was compounded by their dichotomous view of many aspects of their lives, including their pain. They tended to catastrophise about the effects of their pain, its treatment and consequences, and other matters in life. If the participant's implicit theories about pain in general, and their current chronic pain, were markedly different from their health-professionals', difficulties usually arose.

The participants held beliefs about self-efficacy, control of pain, expectations, etiology, diagnosis, assessment and treatment procedures, and outcomes. DeGood (2000) and Garofalo (2000) also found beliefs to affect these pain-related factors. As reported by DeGood (2000): "beliefs and appraisals have been more consistently related both to concurrent adjustment and to response to treatment than have coping strategies" (p. 157). Beliefs of stronger internal control and weaker external control are related to better treatment outcome. In addition, after treatment, the patients' locus of control increased in internality and decreased in externality (Seville & Robinson, 2000). The use of cognitions for positive change in behaviour is related to the person's readiness to change (DeGood, 2000; Prochaska & DiClemente, 1983). Cognitive appraisal is assumed to buffer stressful situations such as chronic pain. Cognitive appraisal of stressors is also linked to the type of coping strategies used by patients (Seville & Robinson, 2000). Appraisal and expression of pain are, in addition, affected by situations such as responses from others (Hallberg & Carlsson, 2000).

People actively seek to make sense of their experiences using a pre-existing implicit model when one is available. If the information is ambiguous, then the person relies on their past learning, beliefs, and attitudes to guide them (Turk, 1996a). A person's attitudes, beliefs, expectations, coping resources, and the health-care system affects their pain, activities, disability, and response to treatment (Turk, 1996a). Certain beliefs may lead to maladaptive coping, and therefore increased pain, disability, and suffering. Dysfunctional beliefs typically equate pain with harm, and assume that rest is an appropriate treatment for chronic pain (Arnoff & Feldman, 2000). It is important for chronic pain patients to develop adaptive beliefs in regards to pain, suffering and disability, and to cognitively reduce the relationship between pain and functioning (Turk, 1996a). If pain is thought to be uncontrollable it is perceived as more intense. Chronic pain patients often feel they have little control over their pain. This may be related to their seemingly unsuccessful attempts to control it (Turk, 1996a). Cognitive beliefs are one of the major factors in disability. Attitudes are better predictors of disability than physical treatments. A belief that there must be a cure for pain is the best predictor of continued use of health-professionals and continued dysfunction (Arnoff & Feldman, 2000). Families also affect attitudes and behaviour (Arnoff & Feldman, 2000). In the current study, implicit theories appeared to have a very large impact on the participants' behaviour, and therefore additionally impacted on their chronic pain and their disability outcome.

A patient's belief is the strongest predictor of task performance and rehabilitation (Arnoff & Feldman, 2000). As Arnoff and Feldman (2000) say: "patients will usually not recover from an injury without a belief that a viable alternative to disability exists" (p. 165). When management of pain is successful, there appears to be a cognitive shift from passivity and helpless beliefs to attitudes about functioning despite the pain (Turk, 1996a). Beliefs about disease partially differentiates those who develop longer-term pain from those who do not (Dworkin, Hartstein, Rosener, Walther, Sweeney, & Brand, 1992b). This implies that health-professional communication and the patient identifying their cognitive beliefs are critically important (Arnoff & Feldman, 2000). A relationship exists between motivation and performance, and the patient's beliefs about self-efficacy and return to work (Arnoff & Feldman, 2000). The participants in the present study reported very little identification or attempted modification of their beliefs by health-professionals. This is perhaps vitally important, given the role

of implicit theories in the maintenance of chronic pain and disability. It is likely that, in the future, greater emphasis will need to be placed on the identification and modification of implicit theories as a management strategy for chronic pain and associated disability. There exist some useful models of belief and schema change associated with other disorders, such as depression and anxiety, which may be able to be adapted for use with chronic pain patients (eg., Beck, 1964a, 1964b; McGinn & Young, 1996).

Functioning is affected by self-efficacy beliefs, coping strategies, and illness related variables (Strahl, Kleinknecht, & Dinnell, 2000). Patients' beliefs about their capabilities, that is their self-efficacy beliefs, and expectations of outcome, are related to, and influence pain-intensity, psychological functioning and distress, adaptive behaviour, adjustment, and the coping strategies used (Jensen *et al.*, 1991b; Schermelleh-Engel, Eifert, Moosbrugger, & Frank, 1997). People are most likely to do what they believe they can do. Self-efficacy beliefs may explain a large amount of the treatment-change in adjustment to chronic pain (Jensen *et al.*, 1991b). Perceived competence has a larger influence on coping strategies than many other factors, including anxiety (Schermelleh-Engel *et al.*, 1997). The participants in the present study who experienced high disability and limited functioning had negative beliefs about their ability to conduct tasks. They either believed that they could not complete them at all, or not complete them without substantial increased pain. They also doubted whether they would ever again be able to participate in some activities, such as work. These beliefs appeared to have a major effect on the outcome of their chronic pain and disability.

COGNITIVE ERRORS, DISTORTIONS, AND DYSFUNCTIONAL BELIEFS

Many participants in the current study used cognitive errors, particularly catastrophising. This was consistent with the literature. The current study also found that catastrophising appeared to be related to maladaptive chronic pain management, decreased functioning, and increased disability.

Cognitive errors are common in chronic pain patients. They have also been found to be linked to depression (eg., Smith, O'Keeffe, & Christensen, 1994). Catastrophising is especially related to increased pain-intensity, pain-perception, pain-behaviour, functional impairment, and disability, as well as depression. It has been found to predict functioning (DeGood, 2000; Geisser, Robinson, Keefe, & Weiner, 1994; Jensen *et al.*, 1991a; Keefe, Brown, Wallston, & Caldwell, 1989). People who believe that their pain is mysterious and enduring use fewer cognitive coping strategies, are more likely to catastrophise, and rate their coping strategies as ineffective (Williams & Keefe, 1991). Keefe *et al.* (1989) suggests that the use of catastrophising as a coping strategy is maladaptive. Catastrophising has been found to mediate the relationship between evaluative and affective aspects of chronic pain, but not the sensory aspects (Geisser *et al.*, 1994). Catastrophising and negative cognitions are important in a cognitive-behavioural conceptualisation of chronic pain (Turk & Rudy, 1992).

Cognitive distortions are related to depression in chronic pain patients. This supports the use of cognitive models of depression in some chronic pain patients (Smith *et al.*, 1994). Depressed patients report higher levels of cognitive distortions than non-depressed patients. Whether they have chronic pain or not is irrelevant (Smith *et al.*, 1994). Therefore, cognitive distortions may be more related to

depression than to chronic pain.

Dysfunctional beliefs are more closely related to maladaptive adjustment and outcome than adaptive beliefs are related to adaptive adjustment and outcome (DeGood, 2000). The role of dysfunctional beliefs may particularly affect people whose pain is incongruent with medical findings. Reesor and Craig (1988) studied two groups of chronic pain patients, one group whose pain was found to be congruent with their physical findings, and another group whose pain was incongruent. Those with incongruent pain reported increased dysfunctional, maladaptive, and anxious cognitions. They expressed fewer thoughts involving perceived control or self-efficacy and reported greater physical impairment and disability. They also rated their pain as higher, displayed increased pain-behaviour, and suffered more from depression. Even when impairment and disability were controlled for, those with incongruent-pain exhibited a greater number of maladaptive and dysfunctional cognitions. The maladaptive beliefs, expectancies, and coping strategies may result in physical deconditioning and, therefore, relate to physical impairment and disability (Reesor & Craig, 1988).

There is strong evidence that negative cognitions play a role in chronic pain. Negative thoughts can predict long-term adjustment; they can also mediate between disease severity and adjustment, and predict adjustment over and above other cognitive factors (Jensen *et al.*, 1991a). Similarly, Rich, Smith, and Christensen (1999) reported that: "attributions have been found to influence the impact of stressful life events" (p. 143). Attribution style can also put people at risk for depression (Jensen *et al.*, 1991a). The beliefs chronic pain patients hold about their pain, its meaning, treatment, and disability, all affect the manageability and outcome of their pain. Examples of beliefs associated with disability are the belief that one is disabled, the belief in medication as a treatment, and the belief that pain impedes normal functioning. Other factors include the person not understanding the cause of their pain, and feeling hopeless and helpless when faced with pain (Jensen *et al.*, 1991a). Pain-related beliefs are related to poorer psychological functioning and coping efforts (Jensen *et al.*, 1991a). For example, the meaning that patients gave to pain had the strongest impact on cancer-pain, in addition to affecting depression and coping in these people (Barkwell, 1991). Frequently, pain is seen as a challenge, a punishment, or the enemy. Therefore, successful management of pain depends, at least partly, on the patient's beliefs about their pain (Barkwell, 1991). Psychosocial dysfunction has been reported to be related to beliefs that emotions affect pain, that others should accommodate their pain, and that pain is disabling. By contrast, physical disability has been reported to be related to beliefs that one is disabled, and that activity should be avoided when in pain because pain signifies physical damage (Jensen, Turner, Romano, & Lawler, 1994b). The importance of beliefs in the development and maintenance of chronic pain and disability supports a cognitive-behavioural model of adjustment to chronic pain and suggests that specific beliefs should be targeted in treatment (Jensen *et al.*, 1994b).

The findings of the current study are supported by the literature. In particular, implicit theories are one of the most important factors in the management of chronic pain. Implicit theories affect management outcome and the disability associated with chronic pain. The literature also discusses similar specific beliefs as found in this study. The importance of beliefs clearly outlines avenues for the management of chronic pain through the use of belief and schema modification. The modification of beliefs and

implicit theories was reported not to occur by the participants in the current study. The impact of beliefs on chronic pain patients clearly needs further exploration.

OPTIMISM

Optimism has been found to affect the experience of chronic pain. Optimism is characterised as the tendency for a person to hold positive expectations about the future (Garofalo, 2000). It is a personality dimension that is a significant mediator of stress and has been found to promote health in several physical illnesses. Optimism positively influences the pain experience and may influence the course of pain (Garofalo, 2000). The level of optimism appeared to differ within each person, over time, in the present study. In the present study optimism appeared to be particularly related to the ability to perform activities, particularly work. Increased optimism was related to increased functioning.

PREDICTABILITY AND CONTROLLABILITY

The participants of this study reported that predictability, and controllability, were preferable to unpredictability. Predictability appeared to influence their mood and level of functioning. Both increased when their pain was perceived as being predictable.

Predictability affects the experience of chronic pain. It reduces stress when it allows the person to respond and make changes. This modifies the impact of the event through the use of an effective coping response. Even when people cannot change the aversive impact of an event, predictability may reduce stress by allowing them to know what to expect. Consequently, they habituate to this, thus reducing anticipatory arousal. People prefer predictability to unpredictability. They show less anticipatory anxiety with events that they perceive to be predictable. Predictability allows people to predict danger through the use of safety signals. Consequently, they do not need to anticipate the danger (or pain) when there is no warning signal for danger. Without a known warning signal, the person is continually vigilant for danger (Miller, 1981).

Many theories of predictability have been proposed. A concise review of these theories is presented by Miller (1981). The theories presented in this review are the preparatory response theory, the uncontrollability theory, the preparatory set theory, the information-seeking theory, the safety signal theory, the blunting hypothesis, the analytic encoding hypothesis, the script hypothesis, and the arousal hypothesis. There are many theories as to why predictability generally reduces anxiety, either by habituation or by allowing the use of coping strategies. These theories may guide health-professionals in helping their chronic pain patients to better predict their pain by allowing for habituation and facilitating the development of coping strategies.

Similar to predictability is a sense of control. The participants in this current study appeared to be less distressed and functioned at a higher level if they perceived their pain to be controllable. This was particularly true when they perceived that they had control over their pain-levels rather than attributing this to someone else (such as a health-professional), to chance, or a higher power. Factors that influence appraisal of control include coping style, pattern of perceived control, gender, and cultural

factors (Seville & Robinson, 2000). Those with an internal sense of control report less psychological distress and better adaptation to chronic pain. By contrast, chronic pain patients with high external locus of control report increased psychological distress, use increased maladaptive coping strategies, and report higher levels of pain. An internal locus of control is related to lower pain-intensity for most cultures (Seville & Robinson, 2000). People with a high belief in chance use increased maladaptive coping strategies, are less effective in using them, rate pain-levels as higher, and have poorer psychological adjustment (Seville & Robinson, 2000). It is thought that locus of control is influenced by the quality of care that chronic pain patients receive (Seville & Robinson, 2000). This further affects the outcome of their chronic pain.

Locus of control beliefs are important for adjustment to chronic pain (Buckelew, Shutt, Hewett, Landon, Morrow, & Frank, 1990). Locus of control affects the choice of coping strategies people make. Those with a higher internal locus of control are more likely to use information-seeking, self-blame, and threat-minimisation coping strategies. The presence of chance and powerful-other locus of control beliefs are related to less use of cognitive pain control strategies (Buckelew *et al.*, 1990). Treatment outcome has been linked to locus of control (Hudzinski & Levenson, 1985). Locus of control may be related to age. Younger men visiting a pain clinic reported a stronger internal locus of control. Older men were likely to rely on chance and powerful-other locus of control beliefs (Buckelew *et al.*, 1990). Locus of control may be affected by prior learning. For example, childhood abuse, like other unpredictable negative experiences, may affect locus of control beliefs, particularly that of chance. Abused people have increased distress, a lowered belief that they can cope, and higher functional interference. While they may not rate their pain or disability as being any greater, they have a greater chance of being distressed and feeling out of control regarding their chronic pain (Seville & Robinson, 2000). In New Zealand, women were found to perceive less personal control, and feel more helpless over their health than men (Seville & Robinson, 2000). Perceived control affects most chronic pain patients, and it appears to have a major impact on the long-term functional outcome of chronic pain. Seville and Robinson (2000) reported that all chronic pain patients noted severe changes in their lives during the first six to twenty-four months. They felt that they had lost control. One group of people were able to regain their sense of self-control and this increased their functioning, for example, by returning to work, not taking medication, and using adaptive coping strategies. The other group continued to struggle adjusting to life with pain.

Helplessness is also very important in chronic pain. It is related to predictability and controllability. Helplessness partially mediates the effects of pain and disability on depression and it has been reported to fully mediate the effects of pain on self-reported pain-behaviour (Nicassio, Schuman, Radojevic, & Weisman, 1999). Depression is a frequent problem for chronic pain patients. Depression may be related to helplessness, hopelessness, and a perceived loss of control over pain and activities. People who feel generally helpless report increased pain and depression (Seville & Robinson, 2000). Those who perceive less control tend to use maladaptive coping strategies, adhere less to physical training programmes, and use less preventative behaviour (Seville & Robinson, 2000).

The information gained in this present study regarding controllability and predictability was con-

sistent with the above literature. The predictability and controllability perceived by the participants varied over time. Some participants regularly reported low perceived predictability and controllability, and an external locus of control. This led to regular feelings of hopelessness and helplessness. It resulted in them failing to use adaptive pain management strategies. These participants were also very functionally limited; they had restricted nearly all of their activities because they were unable to predict which activities would lead to increased pain. This restriction in activities led to increased disability and possibly increased pain and/or perception of pain.

INFORMATION-SEEKING

The participants in the current study appeared to be information seekers, however, this was not matched by their health-professionals, who were reported as not providing the participants with information. This mismatch resulted in distress. Information-seeking affects chronic pain patient's treatment-seeking behaviour and responses to treatment. For example, Miller and Mangan's (1983) study divided gynaecological patients into information seekers and information avoiders. The information-seeking style was related to the subjective and behavioural arousal. Arousal was lower when the level of preparatory arousal was consistent with the person's coping style.

SUMMARY OF BELIEFS AND IMPLICIT THEORIES

The beliefs and implicit theories held by the participants in this study and the difficulties associated with these were consistent with the available literature. Most of the participants in this study described maladaptive beliefs of many kinds. In particular, they would catastrophise and use other cognitive errors, including dichotomous thinking. They held dysfunctional beliefs about the cause of, and their ability to manage, their chronic pain. They had negative thoughts about their pain and the disruption to their lives. Many felt that they could not predict or control their pain and they consequently had little optimism for what the future might hold. They believed that they had neither the ability nor the skills to manage their pain. They often thought that their pain needed to be managed by some alternative person or force, if it could be managed at all. As a result, they often felt helpless, hopeless, and believed that they had no control over their pain. This affected their treatment-seeking and treatment-adherence, and thus, their treatment outcome.

4.2.3.4.3 INTERRUPTING

The participants in this current study sometimes described their pain as completely interrupting their lives and entirely consuming of their resources. They sometimes found that distraction from their pain, by other activities, was a useful strategy. However, they reported that they often were unable to totally distract themselves from their pain and that it was still intrusive.

Pain has been described as an interrupting force that demands attention. The degree of interruption depends on pain characteristics such as the threat the pain poses, and environmental characteristics, such as emotional arousal. A dynamic interaction exists between pain characteristics and environmental characteristics. Pain characteristics include intensity, novelty, predicability, catastrophising

about pain, and somatic awareness. Environmental characteristics include the complexity, and the emotional and arousal properties of the tasks (Eccleston & Crombez, 1999). Eccleston and Crombez (1999) define chronic pain as chronic interruption. Following this argument, pain can be managed if the interruption it causes can be controlled. One way of achieving this is by focussing on non-pain-related demands.

Empirically pain has been reported to disrupt speed and information processing cognitive performance (Grigsby, Rosenberg, & Busenbark, 1995). Additionally, people instructed to attend to pain report increased pain-related thoughts (Harvey & McGuire, 2000). Pain-intensity and interference have been reported to have a higher correlation with disease conviction, particularly the consequences of pain, than measures of psychological distress or hypochondriasis (Dworkin, Cooper, & Siegfried, 1996).

4.2.3.4.4 EMOTIONAL STATES

Consistent with the literature, the participants in this current study reported both that their chronic pain produced stress and anxiety, and that stress and anxiety exacerbated their pain.

Anxiety about pain increases pain-perception and pain-behaviour. Pain-related anxiety has been found to predict physical complaints in chronic pain patients (Strahl *et al.*, 2000). Maladaptive behaviour is also influenced by pain-related depression in addition to anxiety (Schermelleh-Engel *et al.*, 1997). People with high levels of anxiety have been found to experience higher rates of chronic pain than those with low levels of anxiety (Schermelleh-Engel *et al.*, 1997). Social, emotional, and physical functioning is also predicted by anxiety, in addition to self-efficacy and coping strategies. Anxiety about pain is a better predictor of functioning than reported health, education, self-efficacy, and active and passive coping strategies (Strahl *et al.*, 2000). Patients' beliefs that they can cope with chronic pain symptoms and anxiety predict mood states and tension levels. Physiological anxiety is highly and positively-related to mood and tension. This is possibly due to a conditioned emotional response in which there is a long history of pain flare-ups that trigger anxiety. This anxiety may also increase tension and pain (Strahl *et al.*, 2000). Both anxiety elicited by pain, and anxious anticipation of pain, are associated with level of functioning and social interaction. This may lead to avoidance of some situations or activities (Strahl *et al.*, 2000).

Other emotional factors have been related to chronic pain. For example, anger-management style and hostility have been reported to be related to adjustment to chronic pain (Burns, Johnson, Mahoney, Devine, & Pawl, 1996). Gender differences were observed in this relationship. Anger expression generally mediates activity levels, whereas hostility levels generally moderate pain-levels (Burns *et al.*, 1996). This is consistent with psychodynamic theories that suggest suppressed anger is related to chronic pain (Burns *et al.*, 1996).

There is evidence for the immunosuppressive effects of short and long-term stressors on health. These include both qualitative and quantitative changes in immune cells (Kennedy, Kiecolt-Glaser, & Glaser, 1988). Psychological factors such as depression, loneliness, attachment, and interpersonal relationships, including marital disruption, have been related to immune cell change. This has an effect on

disease susceptibility and health (Kennedy *et al.*, 1988). Acute stressors produce mixed effects on immunity. Chronic stress is related to suppressed immune function and this functioning may not adapt over time (O'Leary, 1990). Some personality styles may also have a negative effect on immune response (O'Leary, 1990).

4.2.3.5 The Role of Significant Others and Social Support

The effect of significant others is most clearly seen in terms of social support. Social support has been discussed more generally relation to other factors in section 4.1.3.4. The literature reviewed here specifically relates to the effect of social support on health and pain. The participants in the present study discussed several aspects of how significant others responded to their pain. Often they described pain-reinforcing behaviours on the part of their significant others. This may have led them to increase their pain-behaviours. Despite this, many of the participants were unhappy with the support they received from others, particularly significant others. They usually reported feelings of abandonment by significant others in response to their chronic pain. This reaction is likely to have been influenced by their many other dysfunctional interpersonal behaviours.

Interpersonal interactions are important. Interpersonal stress is related to higher levels of pain (Zautra, Hamilton, & Burke, 1999). Negative interactions with significant others have negative consequences on physical and psychological well-being. These negative consequences may exceed the benefits of positive interactions in some situations. Punishing responses to pain by spouses are related to pain and activity levels and activity interference levels. These may be increased by anger and hostility expressed by the pain-sufferer (Burns *et al.*, 1996).

The spouse response model suggests that expression of hostile anger is linked to a low number of positive, and a high number of negative, responses from spouses, and that this leads to poor adjustment. This model has been supported by research investigating pain and interference with activities, and their link to anger expression. These factors are partly accounted for by spouse responses (Burns *et al.*, 1996).

Extroverted people have a higher tolerance for pain and experience less pain in a given situation. However, they are more likely to complain of pain. As pain becomes chronic, patients are likely to become increasingly socially introverted, which in turn causes them to be increasingly sensitive to pain (Phillips & Gatchel, 2000). The difference between extroverts and introverts could be related to the social support that they receive. Social support has been shown to be related to stress levels, and stress levels in turn have been shown to be related to pain experience (Phillips & Gatchel, 2000).

Disease-related physical changes affect self-esteem related to appearance. In turn, self-esteem may be related to psychological distress (Malcarne, Hansdottir, Greenbergs, Clements, & Weisman, 1999). These physical changes may have a stronger relationship with self-esteem and adjustment when the person has a less serious illness (Malcarne *et al.*, 1999). This may particularly affect people whose chronic pain is not easily explained by medical or physical changes, and who are told that their chronic pain is incongruent with medical findings. They have higher affective and evaluative components to their pain and they see it as highly distressing, disturbing, and debilitating. They are also emotionally

distressed, and display increased pain-behaviours. They anticipate distress, amplify their pain, and feel that they are less able to control their pain (Reesor & Craig, 1988). People who amplify their distress are increasingly likely to rest, and avoid physical activity, exercise, and household chores than those who are adaptive in their coping (Reesor & Craig, 1988). Helplessness and perceived lack of control over pain is associated with reduced activity (Reesor & Craig, 1988). People vary in the amount of emotional and physical dysfunction or adjustment that accompanies chronic pain (Seville & Robinson, 2000).

Chronic pain patients are likely to have examples of both painful and mental illness amongst their relatives (Merskey, 1982b). In many chronic pain patients there is a family history for, and possible biological links to, depression, alcoholism, and pain. This may be true even when the chronic pain patient is not depressed (Magni, 1987; Merskey, 1982b). The percentage of first-degree relatives of chronic pain patients who are affected by depression ranges from 38% to 69% (Magni, 1987). Consistent with this research finding, most of the participants in the present study identified immediate and extended family members with pain, depression, and alcohol abuse difficulties.

Pain-behaviours have been found to be related to reported pain-intensity and physical disability (Romano *et al.*, 1988). Pain-behaviours are often reinforced by significant others. There may not be any deception on the part of the chronic pain-sufferer. Rather pain-behaviours may be an expression of the distress they are experiencing. However, illness-behaviour is learned and modified in a dynamic process, which changes over time (Arnoff & Feldman, 2000). Participants in the present study described learning about pain-behaviours, either from other illnesses or injuries, or from other family members.

HEALTH AND SOCIAL SUPPORT

Social support is related to health, illness, and disease. The World Health Organisation defines health as a state of physical, social, and mental well-being, including a lack of disability and symptoms, and a state of wellness (Kaplan & Toshima, 1990). Social activity is included in the definition of health. Theoretically, the functional effects model suggests that the social environment can affect health outcomes, and additionally, that illness can affect the social environment (Kaplan & Toshima, 1990). This is a complicated interrelated system. Locus of control and help-seeking beliefs are related to use of social supports. More use of social supports are related to internal locus of control and beliefs about the helpfulness of help-seeking (Eckenrode, 1983). The participants in the present study perceived a lack of social supports and generally engaged in very little social activity. They generally had an external locus of control. This external locus of control, social isolation and lack of social supports may have contributed to the development and maintenance of their chronic pain and disability. These issues may be useful to target in management of chronic pain.

Some researchers have suggested a negative relationship between social support and health. While the family is often seen as offering support that will increase positive outcomes, there is increasing evidence that family support may in fact reinforce pain-behaviours and therefore unintentionally increase impairment and disability (Kerns & Weiss, 1994). This may occur as supportive behaviour is

offered only when the person is displaying distress or pain-behaviours. In some situations the support may occur because of maladaptive personal characteristics and coping styles (Sarason *et al.*, 1990). Despite other contradictory evidence, Gil, Keefe, Crisson, and Van Dalen (1987) found that social support was related to better adaptation to chronic disease. Sarason *et al.* (1990) reported that health is related only to perceived social support. This finding is consistent with the literature on social support discussed in section 4.1.3.4. In addition, stress related to social disruption, and depression, has been found to have a negative impact (O'Leary, 1990). More specifically a combination of high stress and low social support produces negative health outcomes (Kaplan & Toshima, 1990). Social networks are an indicator of longevity; those with very few social ties have a higher rate of mortality. Thus, social support may be an important determinant of health outcomes (Kaplan & Toshima, 1990).

The literature reports that social support, particularly perceived social support, can have both a positive and a negative impact on health and chronic pain. The factors determining whether the outcomes of social support are positive or negative appear to be the types of behaviour that social support is contingent upon. Many participants in this study reported only gaining responses from significant people in their lives when they were displaying pain-behaviours. This included, for example, significant others doing chores and giving them attention in response to their pain-behaviours. A small number of participants also reported reinforcement for adaptive behaviours, such as appropriate exercise.

Studying the effect of chronic pain on relationships can be complicated by the fact that difficulties in relationships often follow the diagnosis and treatment of serious illnesses (Kaplan & Toshima, 1990). In addition, people with chronic illnesses require increased social support. These people often feel alienated from significant others (Kaplan & Toshima, 1990).

The effects of social support on health outcomes are complex (Kaplan & Toshima, 1990). A caring significant-other may have a detrimental effect on health outcomes due to reinforcing maladaptive behaviour. They may not reinforce optimal health outcomes. They may reinforce short-term comfort over long-term consequences. This happens because of a lack of information or because of existing unhelpful beliefs. Positive functional effects are possible if the support person reinforces appropriate behaviours (Kaplan & Toshima, 1990). Very few studies have shown consistent positive benefits of social support (Kaplan & Toshima, 1990). Support at home and at work has been found to predict psychosomatic complaints and depression (Holahan & Moos, 1982).

Beliefs about social networks influence perception of stress, coping style, outcome, and the types of relationships sought. People's perceptions of their social networks are related to their coping ability (Tolsdorf, 1976). The family provides an important environment in which to learn about health-related beliefs and behaviours. This learning happens across the lifespan (Kerns & Weiss, 1994). The sick role is thought to mirror the expectations significant others and health-professionals have of the chronic pain-sufferer's behaviour. A sick role could be an attempt to negotiate outcomes in the family context (Kerns & Weiss, 1994). Due to their sick role, the patient may see society as being overly demanding. They may get social reinforcement for sick role expression. Social support is the strongest predictor for the maintenance of the sick role (Kerns & Weiss, 1994).

PAIN AND SOCIAL SUPPORT

The social environment can reinforce both adaptive and maladaptive health behaviour (Kaplan & Toshima, 1990). This was clearly shown in the present study. Help, attention, and reinforcement had differing effects on different people, and at different times. The most important variable appeared to be the specific behaviours that received attention and reinforcement. If significant others reinforced adaptive behaviours, leading to increased functioning and decreased pain in the long-term, this had a positive long-term outcome. However, the opposite was also true, with significant others having a disruptive effect on long-term outcome by reinforcing unhelpful behaviours. Chronic pain was reported to have a major impact on the families of the participants. Members of families reacted differently when a member of their family experienced chronic pain. Nearly all the intimate relationships the participants were involved in broke down.

Social support has historically been expected to have positive consequences for the chronic pain process (Turk, Kerns, & Rosenberg, 1992). Operant models of learning emphasise the importance of reinforcement contingencies in the experience of pain and the maintenance of chronic pain-behaviours. They suggest that attention from significant others may maintain or even increase maladaptive chronic pain-behaviours and disability (Flor, Turk, & Rudy, 1989; Turk *et al.*, 1992). The person's partner is an important source of reinforcement of pain-behaviour (Flor, Kerns, & Turk, 1987a). Positive attention from a partner in response to pain-behaviours has been found to increase reported pain-intensity, observed pain-behaviours, and disability. Negative response to pain is associated with affective distress (Turk *et al.*, 1992). The chronic pain patient's interpretations of the responses of others to their pain are important. The quality of this relationship is an important mediator of the outcome of chronic pain (Turk *et al.*, 1992).

Pain and pain-behaviours are affected by social support. People communicate their pain via pain-behaviours, which are affected by social learning (Gil *et al.*, 1987). Pain-behaviour can lead to positive social consequences such as attention, sympathy, and avoidance of unwanted responsibilities. The people who are satisfied with their social support are usually the ones that receive reinforcement for their maladaptive pain-behaviour (Gil *et al.*, 1987). Actual numbers of people available for social support do not influence observed pain-behaviour, only the perceived quality of the support (Gil *et al.*, 1987). Pain-behaviours have been positively related to satisfaction with social support; those with high levels of social support show higher levels of pain-behaviours (Gil *et al.*, 1987). A patient's perception of the quality of responses from significant others and social support may predict pain, the impact of pain, and negative moods, including depression (Feldman, Downey, & Schaffer-Neitz, 1999; Flor *et al.*, 1989; Kerns, Southwick, Giller, Haythornthwaite, Jacob, & Rosenberg, 1991).

Many factors have been found to influence the impact of social support on chronic pain, and the functioning of people with chronic pain, as is described below. The impact of reinforcement of pain-behaviours by significant others appears to be dependent on gender, marital status, and marital satisfaction (Flor *et al.*, 1989). Higher correlations exist between the responses of significant others and the impact of pain for maritally satisfied patients (Flor *et al.*, 1989). Herrick, Elliott, and Crow (1994) reported that age, depression, and social support are related to health complications in

a negative way. The relationship between social support and health complications depends on the type of support provided (Herrick *et al.*, 1994). Disability is also related to social support and coping (Kaplan & Toshima, 1990). The type of illness interacts with social support to influence functioning. For example, people with myofascial disorder report less social support, increased sensory and affective pain, together with increased depression and interpersonal conflict, than patients with arthritis. But they do not differ on personality traits (Faucett & Levine, 1991). Less intense arthritic pain is associated with higher family conflict and more punishing responses to the person's pain from significant others. Less intense pain for myofascial pain-sufferers is associated with higher social network conflict (Faucett & Levine, 1991). People with different chronic pain disorders may differ in their responses to social relationships.

Grounded theory research has been used to examine chronic pain-sufferers (Snelling, 1994). Two main variables were reported by Snelling (1994) to be important; social relationships and coping techniques. Important aspects in social relationships Snelling (1994) found were: marital conflict; reduced sexual activity; social isolation, including reduced contact with friends and family; role difficulties; and anger, anxiety and resentment related to of their dependency. Chronic pain negatively affected the chronic pain patient's partner and family. The degree of this affect is dependent on how the family coped with the chronic pain patient's pain and disability (Snelling, 1994). Other qualitative studies have been conducted addressing social aspects of chronic pain. Bowman (1994) reported that pain affected chronic pain patients physically but that the meaning and impact of their pain is further reaching. The effects of chronic pain included: social isolation; a changed awareness of others' pain; and psychological reactions, including a negative response to others, a desire to maintain independence, and a belief that their pain is real (Bowman, 1994).

Chronic pain affects the whole family. In recognition of this, some authors have recommended a family systems approach to managing chronic pain. They suggest that learning to live with chronic pain is best done in supportive relationships and that the family should collaboratively aim to obtain a good quality of life for everyone, including the chronic pain patient (Rowat, 1992; Rowat, Jeans, & LeFort, 1994). Recognition needs to be given to the vital role the family plays in the total pain experience (Rowat, 1992). Effective management of chronic pain needs a partnership between the health-professional, the patient, and the patient's family (Rowat, 1992). Disability in one family member is likely to have profound effects on family functioning. Thus, the family will need to accommodate that person in the family system (Roy, 1990). Effectiveness of family functioning will depend on the family being able to live with many uncertainties, perhaps without hope of full recovery, and with the chronic pain patient possibly having little input into maintenance of the family system (Roy, 1990). Chronic pain-related problems are vast and often unpredictable. The chronic pain patient may be severely impaired. However, under these conditions many families do continue to function effectively (Roy, 1990). Chronic pain can result in disruption of intimate relationships and social isolation (Grant & Haverkamp, 1995). This was found with many of the participants in the current study. The participants of this study became very isolated; their families did not accommodate their pain and pain-behaviours. Their families were not included in their pain management relationships with health-professionals.

Reinforcement of pain-behaviours by partners is related to perceived pain and activity levels (Flor *et al.*, 1987a). Flor *et al.* (1987a) reported that the best predictor of activity was the perception chronic pain patients had of their partner's reinforcement, followed by the partner's reported responses. Spouse reinforcement is not related to the spouses' marital satisfaction or their perception of the chronic pain patient's pain-levels. Rather it is related to the interference of the chronic pain patient's pain with their spouse's life, moods, feelings of control, and with the duration of pain (Flor *et al.*, 1987a).

4.2.3.6 Choosing a Strategy

A strategy to manage chronic pain was chosen after input from the person's implicit theories, thoughts and beliefs, the impact of health-professionals and significant others. The effectiveness of different specific treatment procedures is covered in section 1.6 in the introduction chapter. Therefore, management and coping strategies will be examined below. This will include models of coping, the effect of coping on functioning, and finally the concept of cognitive deconstruction.

4.2.3.6.1 USE OF MANAGEMENT AND COPING STRATEGIES

The participants in this study reported using different coping strategies in the acute and chronic stages of their pain. Most of the participants used active (or attentional) strategies during the acute pain stage and avoidant strategies during the chronic pain stage. As described below, the research predicts this pattern of strategy use is maladaptive and that it will lead to a negative outcome of increasing pain and functional limitation. The participants in this study who employed these strategies in this manner confirmed the negative outcome.

The life of a chronic pain patient is greatly influenced by pain and coping strategies. The strategies they use depend on what is at stake and the person's perceived options for coping (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Green, 1986). Coping strategies are assumed to buffer stressful situations, including chronic pain (Hallberg & Carlsson, 2000). It is important to note that successful coping strategies for acute pain and chronic pain differ. In particular, people with acute pain show better adjustment, having lower levels of anxiety, depression, pain, and somatisation, and greater social involvement when they employed avoidant rather than attentional coping strategies. Examples of avoidant strategies include thinking of something pleasant, or eating more. Examples of attentional strategies include seeking information, drawing on past experience, and positive thinking. However, the opposite occurred for chronic pain patients who showed better adjustment using attentional rather than avoidant strategies (Holmes & Stevenson, 1990). Problem-focussed coping has been reported to be associated with lower anxiety and depression at the time of diagnosis, whereas emotion-focussed coping is associated with increased anxiety and depression. The interaction of problem-focussed coping and perceived control predicts lower anxiety and depression only around the time of diagnosis. By contrast, in unchangeable situations emotionally focussed strategies tend to be used (Hallberg & Carlsson, 2000). This suggests that patients should use different strategies depending on whether their pain is acute or chronic. This is an important distinction to make when examining literature.

The research presented in the following sections will examine chronic pain or illness strategies unless otherwise indicated.

While people use a diverse range of coping strategies, passive strategies are most commonly reported. Self-initiated active strategies (such as walking, swimming and cycling) are not regularly continued over time (Hallberg & Carlsson, 2000). Passive strategies (including hopelessness and feelings of not being in control), are often the beginnings of a vicious cycle leading to increasing pain and poorer functioning (Hallberg & Carlsson, 2000; Jensen *et al.*, 1991a). The participants in the present study also reported this. Very few of them maintained active coping strategies (such as exercise) over time, despite the positive impact of such strategies when they were consistently used.

Avoidant coping and greater reactivity to stress in interpersonal situations have been related to decreased interpersonal interactions (Zautra *et al.*, 1999). Social isolation, and other avoidant coping strategies, in response to pain, may lead to a reduction in social interaction. This loss of interpersonal interaction may lead chronic pain patients to become more reactive to social stressors, to cope poorly with pain, and to report a lower quality of life (Zautra *et al.*, 1999). Indeed, the participants of the present study became socially withdrawn and isolated. Many of them identified that this had a negative impact on their pain. These strategies were often related to an external locus of control, which has been found by Jensen *et al.* (1991a) to be positively related to psychological distress, helplessness, the use of diverting attention, hoping, and praying coping strategies. Those with an internal locus of control employed active coping strategies, were found to be less depressed, benefited from positive adaptation to chronic pain, and reported less interference with daily functioning (Jensen *et al.*, 1991a). Active coping strategies have been related to improved physical and psychological functioning (Jensen *et al.*, 1991a). People employing attentional strategies are less depressed and anxious, and more active than those using avoidant strategies (Jensen *et al.*, 1991a). The most useful cognitive coping strategy is using coping self-statements. The next most useful cognitive coping strategy is distraction. Useful behavioural strategies include regular exercise, social support, and task persistence combined with activity pacing (DeGood, 2000). Unfortunately, most of the participants in the present study did not use active coping strategies and their locus of control was usually external to themselves. This appeared to have a negative impact on their pain and functioning. However, use of coping strategies were not stable. The participants changed their strategies over time, usually moving from passive to more active strategies in the latter stages of their chronic pain process. This provided more positive outcomes.

Coping styles are related to health-professional - patient interactions, such as the desire for more information and vigilant health-behaviour. These have an impact on many types of health-related behaviour (Steptoe & O'Sullivan, 1986). Understanding and knowledge mediates between the chosen coping style and the desire for information (Steptoe & O'Sullivan, 1986). Coping is strongly related to cognitive appraisal. Appraisals are also related to outcomes, especially in stressful situations (Folkman *et al.*, 1986). As discussed in some detail earlier in this chapter (section 4.2.3.2), the participants in the present study regularly desired more information than they received from nearly all of the health-professionals with whom they consulted.

The chronic pain patients in this study used a wide variety of coping strategies at different times in their chronic pain process. Some of these appeared to be more effective than others. In particular, active strategies tended to be more effective than passive strategies, especially in the longer-term, and when functionality was used as an important outcome variable.

4.2.3.6.2 MODELS OF COPING STRATEGIES

Coping strategies change people's perceived pain-intensity, their ability to manage or tolerate pain, and their ability to continue activities. Researchers have tended to make dichotomous distinctions between types of coping. The most common distinction is that between passive, and active or instrumental coping (DeGood, 2000; Hallberg & Carlsson, 2000; Strahl *et al.*, 2000). Passive coping is characterised by not doing activities in order to reduce distress. Examples of passive coping are resting, restricting activities, and getting others to manage the situation. This is associated with withdrawal or avoidance. By contrast, active coping is characterised by actively doing something to reduce distress. Examples of active coping are performing activities, distraction, and practicing stress management. This, in turn, is associated with increased social interaction (DeGood, 2000; Strahl *et al.*, 2000). Strahl *et al.* (2000) suggest that treatment programmes should focus on decreasing the use of passive coping strategies, while increasing the use of active strategies, in addition to increasing self-efficacy and decreasing pain-related anxiety. Passive coping has been found to be related to withdrawal, chronic difficulties, and decreased adjustment, whereas active coping strategies initiate action to manage pain (Hallberg & Carlsson, 2000; Jensen *et al.*, 1991a). Research results have been published supporting the use of active rather than passive strategies, and that the use of these strategies are related to outcome (Hallberg & Carlsson, 2000).

While active coping strategies have been found to be associated with adaptive functioning, and passive strategies with greater pain and depression, there is no evidence that any one coping strategy is universally more effective than others (Turk, 1996a, 1996b). Different strategies may be more effective for individual people and in different situations (Turk, 1996a, 1996b). People who are taught adaptive coping strategies report that pain-intensity decreases and pain tolerance increases (Fernandez & Turk, 1989). Cognitive factors may also have a direct effect on physiological measures by changing autonomic sympathetic nervous system arousal, endorphin production, and muscle tension (Turk, 1996a, 1996b). Fernandez and Turk (1989) reported that cognitive coping strategies are more effective than no treatment and expectancy controls. They reported that imagery methods are most effective and pain acknowledging least effective. Strategies that are used most often are cognitive coping, suppression, helplessness, diverting attention, or praying (Rosenstiel & Keefe, 1983).

Other dichotomous separations of coping strategies have been proposed. These include internal versus external, problem versus emotion-focussed, self-efficient versus helpless, and illness versus wellness-focussed coping (DeGood, 2000; Hallberg & Carlsson, 2000). Problem-focussed coping attempts to change the situation to reduce distress, whereas emotion-focussed coping involves managing the emotional reaction to a situation (DeGood, 2000). Optimists usually use problem-focused coping, and pessimists emotion-focused coping (including catastrophising). This may account for the increased

pain reported by pessimists (Garofalo, 2000). Illness-focussed coping (such as taking medication) aims to reduce pain and illness. Wellness-focussed coping promotes health through activities such as relaxation, exercise, and changing cognitions (DeGood, 2000). Fernandez and Turk (1989) categorised cognitive coping strategies into six classes: external focus of attention, neutral imaginings, pleasant imaginings, dramatised coping, rhythmic cognitive activity, and pain acknowledging. Miller (1983) suggests that coping styles exist on a continuum from approach to avoidance. Approach styles are active and engaging, with attention to detail. They include seeking information, enhancing spiritual life, self-distraction, sharing feelings, and physical relaxation. Avoidance styles diminish threat by inattention, ignoring, or rationalising. Avoidant strategies include denial, suppression, repression, minimising symptoms and therapy, withdrawal, and isolation. Miller (1983) suggests that combinations of both of these approach and avoidance styles result in effective coping. The participants in the current study appeared to use more external, emotion focussed, helpless and illness-focussed coping, although these strategies changed over time. They used a combination of approach and avoidance strategies, although the balance of these was often not helpful.

4.2.3.6.3 FUNCTIONING AND COPING STYLE

In the present study, functioning appeared to be related to the coping style that was used. Both coping style and level of functioning changed in a positively related way over time. In particular, a higher level of functioning was reported when the participants used active rather than passive strategies. Implicit theories also appeared to play a large role in the strategy chosen and, therefore, the outcome.

The relationship between functioning and coping style depends on the type of variable measured. For example, active coping strategies might facilitate social interaction, but they could also result in greater pain. Therefore, they might be reported as having a negative outcome if only pain-intensity is measured (Strahl *et al.*, 2000). Pain, anxiety, and self-efficacy account for a significant amount of the variance in functioning (Strahl *et al.*, 2000). Catastrophising is related to poorer emotional adjustment, but not pain ratings (Rosenstiel & Keefe, 1983).

High use of active coping strategies is related to functional adjustment (Rosenstiel & Keefe, 1983). Many factors are involved in this finding, two of these include the different coping strategies used and the ways that functioning can be measured. Examples of these coping strategies and ways of measuring outcomes are discussed below. Better functioning and decreased pain is found among those who believe they can control their pain, who avoid catastrophising, and who think they are not severely disabled. These beliefs mediate pain severity and adjustment (Jensen *et al.*, 1991a; Seville & Robinson, 2000). Lawson, Reesor, Keefe, and Turner (1990) also observed a relationship between the use of cognitive coping and adjustment. Cognitive guidance results in improved mood and reduced symptomatology (Hirsch, 1980). Positive adjustment is related to acceptance of responsibility and low levels of self-blame in people with renal disease, although this is context specific (Rich *et al.*, 1999). Coping strategies are important in the adjustment to chronic pain (Jensen *et al.*, 1991a). The use of passive strategies has been related to catastrophising and low ratings of coping efficacy (Rosenstiel & Keefe, 1983). Passive coping is inversely related to physical functioning (Strahl *et al.*, 2000).

Chronic pain patients become preoccupied with pain. It affects every aspect of their lives. Their pain interrupts their lives and demands attention. They find it difficult to disengage from their pain and this leads to continuous awareness of the pain, and use of coping strategies. Some coping strategies, such as passivity, escape behaviours, resignation, and catastrophising may negatively effect functioning. These strategies were common in a study of pain-preoccupied patients reported by Hallberg and Carlsson (2000). Pain-preoccupied patients use subjective pain language, usually describing their pain in physical or affective terms. The descriptions are often dramatic. This may be due to a difficulty finding the appropriate words, or the perception that pain is a warning or threat. Distrust, and the patient's desire to be understood and respected, might also affect the pain description. Validation is felt when pain is described by health-professionals in physical rather than psychological causes. The pain-sufferer often becomes self-centred and preoccupied by their pain (Hallberg & Carlsson, 2000). These findings of Hallberg and Carlsson (2000) were very similar to those found in the present study.

Adjustment has been found to be related to pain-behaviour, pain severity, activity level, physical strength, mobility, medication, health-professional use, employment status, and depression. There are several components to adjustment, including activity level, psychological adjustment, medication, and health-professional use (Jensen *et al.*, 1991a). Significant relationships have been reported between use of ignoring and reinterpretation strategies and downtime; use of attention diversion, including praying, hoping, and catastrophising and pain-intensity; and catastrophising and physical and psychosocial impairment (Turner & Clancy, 1986).

Those whose pain is incongruent with physical pathology have a poorer outcome to medical treatment and tend to use health-care resources excessively. Those with incongruent-pain are often overwhelmed by their pain, ineffectively cope with it, have restricted physical functioning, and higher levels of disability and impairment (Reesor & Craig, 1988). People who are still seeking treatment for their pain also differ from those who are not. Those not seeking treatment have fewer distorted thoughts, are less distressed, have higher activity levels, and use less medication. Those not seeking treatment live their lives despite their pain, as opposed to those still seeking treatment, who are continually seeking a cure for their pain (Reitsma & Meijler, 1997). Learning to live with pain may be a realistic goal and could be a goal for treatment (Reitsma & Meijler, 1997).

Other factors that affect treatment include cultural influences on pain expression, meaning attributed to pain, coping style used, and degree of perceived control over pain (Seville & Robinson, 2000). As noted earlier, cognitive-behavioural and operant-behavioural treatments both result in changes to the use of coping strategies (Turner & Clancy, 1986).

4.2.3.6.4 COGNITIVE DECONSTRUCTION

"Cognitive deconstruction" is a term that describes how many people attempt to manage their chronic pain, at least at some time in their chronic pain process. Although no literature was found directly linking chronic pain to cognitive deconstruction, the process of cognitive deconstruction appeared to be present in varying degrees in the participants of this study. Consequently, cognitive deconstruction provides a useful construct to organise some of the participants' experiences and behaviour. The

specific factors involved in cognitive deconstruction can also be targeted in management of chronic pain.

Baumeister (1991) suggested that cognitive deconstruction is a coping strategy used by some people to deal with modern-day life. Constructs present in the modern world increase the likelihood of cognitive deconstruction occurring. Baumeister (1991) suggests that this is because the emphasis is now placed on the individual, rather than on the community. The individual is conceived to be in control and responsible for how he or she is doing. Each individual has standards, values, expectations, and goals specifically related to his or herself. Baumeister (1991) suggests that the increased need to escape is related to increased expectations of the person to be unique and to achieve as an individual.

Baumeister (1990a) examines cognitive deconstruction in the context of, and as a cause of, suicide. As a coping strategy, cognitive deconstruction does not necessarily lead to suicide. Although many chronic pain patients attempt suicide and this may be linked to cognitive deconstruction. This theory of self-avoidance suggests that people try to avoid a perception of negative self-awareness by using a cognitive process to escape the effects of a stressful or traumatic experience. This can develop into a dysfunctional way of coping with ongoing stress due to the reinforcement through the escape from the negative self-evaluation that it provides (Ward, Wilson, Polaschek, & Hudson, 1995c). The same theory can be attributed to chronic pain. The data in the present study suggest that the chronic pain-sufferers undergo a similar series of steps to reach cognitive deconstruction, and that they may, or may not, take the additional step to attempt suicide.

The steps to cognitive deconstruction, as explained by Baumeister (1990a), begin with a situation where the person falls short of their own standards. Secondly, the person attributes this failure to internal factors. This in turn, makes self-awareness painful, which creates negative affect. The person tries to escape this negative affect and painful self-awareness through cognitive deconstruction. In this cognitively deconstructed state, the person thinks concretely, is cognitively rigid, focused on the here and now, and is concerned only with immediate goals. In this state, they are often passive, irrational in their thinking, lack emotion, and can become disinhibited, which may then lead to suicide. Looking at these steps in more detail it is easy to see how the chronic pain-sufferer can be encompassed by this theory and reach the cognitively deconstructed state that they have demonstrated in the present study.

Baumeister's (1990a) theory of cognitive deconstruction predicts firstly that the person falls short of their standards. It is not important whether the standards or self-expectations are unrealistically high or if they are realistic, what is important is that the person fails to meet their standards and expectations. People who attempt suicide often appear to be doing well and to be well off. This may follow because a successful person expects more out of life. Often there are favourable long-term consequences that lead to high expectations, but unfavourable short-term consequences, beyond which the person cannot see. For the chronic pain participants who were part of the present study, the expectations and standards they set themselves were very high because of their perfectionistic tendencies and the fact that they had achieved highly in the past. They were, therefore unlikely to meet these standards. These high standards were also general and, therefore extended to many areas of their lives such as work, hobbies, and romantic relationships. Baumeister (1990a) reports many studies

that link failure to suicide. For example, deterioration in circumstances at work is associated with increased suicide. The work status of the person with chronic pain is often severely compromised. This was clearly evident amongst the participants in the present study. They generally held very high standards for themselves at work, which left them open to even greater feelings of failure when they could not meet their standards. Another example is if a person's expectations for intimacy have been disappointed; this has been shown to lead to suicide (Baumeister, 1990a). Certainly the participants in the present study had their expectations for intimacy disappointed. Many of their marriages and long-term relationships had broken up, contrary to their expectations. Deterioration in health has also been linked to an increase the risk of suicide (Baumeister, 1990a). By definition, people with chronic pain have problems with their health. This deterioration in health was also beyond their expectations.

The second phase of the theory of cognitive deconstruction suggests that the deconstructing person attributes these unfavourable outcomes internally, rather than attributing them to an external factor. Feelings of worthlessness and rejection are central (Baumeister, 1990a). The participants of the present study often felt rejected, humiliated, inadequate or guilty about not being able to work and not being able to function in their everyday lives. They actively disliked themselves and became self-derogatory. They blamed themselves for their shortcomings. Usually these attributions were generalised from specific events to internal, global, stable, and enduring traits. The participants thought that these traits indicated the presence of future additional problems. A further aspect to Baumeister's (1990a, 1991) theory is that this loss in self-esteem must be a recent rather than a long-term problem. Otherwise the person would expect negative experiences and, therefore, a failure in expectations would not be achieved. The participants in the present study often felt that they could not live up to their past standards or the standards of others, both of society and their significant others. Chronic pain participants often experienced episodes when they failed to meet their expectations and they attributed this internally. For example, most participants had what they perceived as major failings in work and relationships. Additionally, over time, they constantly found that there were little tasks they were now unable to complete. These factors led to a series of failures, low self-esteem, and feelings of powerlessness. Often the participants' negative views of themselves were vastly different from their perceptions of what others could still do. This might have been due to the very high standards that they held for themselves and for others. In turn, these standards may have been related to their perfectionistic traits. They often felt that they could not live up to other people's demands as others expected them to fully recover from their pain.

The third step in the cognitive deconstructing process identifies a person as being highly self-aware and self-focused. This follows because the person compares themselves to their own high standards. This state is aversive, for the person is highly aware of their shortcomings, inadequacies, and incompetencies. This awareness of shortcomings can be very real for people with chronic pain, especially because of the physical degradation that occurs with a chronic pain problem. The participants in the present study were very aware of all the things that they could no longer do and often felt very guilty about this.

The fourth step in this process is the negative affect that arises from this negative comparison, par-

ticularly anxiety and depression. Anxiety may be reported as worry, guilt, or self-blame. It may also occur when people view themselves as incompetent, and feel that they cannot live up to their duties, obligations, and moral standards. Depression is the other main negative affect. This is commonly felt as sadness, loneliness, feeling a failure, worry, dejection, and also anger. Several of the other features of Baumeister's model are consistent with depression. Examples are passivity, lack of positive affect, and constricted time perspective (Baumeister, 1990a). All of these features were common in the participants in the present study. This negative affect was very aversive, leading the participants wanting to end the negative affect as quickly as possible. This could be done in two main ways: either by ceasing to self-blame, perhaps by finding religious or social contexts to reframe and reinterpret their situation; or by ceasing to feel the emotion. The participants in the present study used both of these types of strategies at different times. Some participants experimented with blaming others or turning to religion. Many moved on to the fifth step and cognitively deconstructed to escape this aversive emotion.

In the fifth step of the cognitive deconstruction process, the person tries to avoid the negative affect by escaping meaningful thought through moving into the cognitively deconstructed state. This is a numb-like state, with the person only being self-aware in a very concrete way. In this state the following four main conditions are experienced:

1. Time is narrowed to include only the present. This blocks out the past and prevents thoughts about the future (Baumeister, 1990a). This was seen in the participants of the present study when they could not follow treatment which was known to be effective in the long-term, but which was not immediately effective. Often the participants stated that they were "just living day to day". They were unable to contemplate a happy future. They felt very hopeless, and therefore preferred not to think of any future. Reminiscing reminded them of "what could have been" and how much worse off they were now.
2. People lack realistic long-term goals (Baumeister, 1990a). This was obvious with the participants of the present study when they were asked to contemplate the future; they were very unrealistic in discussing their future goals.
3. People tend to think in a very concrete manner, concentrating on physical sensations, such as pain sensations, in the absence of higher-level cognitive thinking (Baumeister, 1990a). This is known to intensify the feeling of pain. The participants of the present study reported this.
4. Cognitively deconstructed people tend to be cognitively rigid, reject meaning, and avoid interpreting situations (Baumeister, 1990a). The participants in the present study who were not open to new ideas regarding their treatment displayed these effects. They displayed inflexible thoughts, emotions, behaviours and coping strategies. The participants tended to use dichotomous thinking, were unable to think of possible solutions or problem-solve, failed to compromise, and were non-spontaneous. This rigid method of coping was not conducive to solving their pain, work, or interpersonal problems. Their problems often escalated as they failed to be solved.

If a person reaches a cognitively deconstructed state, they will be left feeling vaguely unhappy, without much positive or negative emotion. However, because cognitive deconstruction can rarely be sustained over long periods of time, bouts of extremely negative emotion will be felt. Due to the absence of meaningful thought, the person cannot develop new ways of coping in order to return to a "normal" state of living. Any attempt at meaningful thought recreates rushes of negative affect, leading to a further period of cognitive deconstruction.

Cognitive deconstruction provides a means to escape from the struggle to maintain an image and to abandon striving for self-esteem and control. It also involves avoiding all the pressures, demands, and responsibilities that make life stressful, and to become just a body (Baumeister, 1991). To feel like escaping problems is different from feeling the need to escape from the self. The latter is intricately related to how people feel about themselves, rather than just their problems. Society tends to be very focussed on reality and rejects anything that takes one away from reality (Baumeister, 1991). The need to escape from oneself may not necessarily be bad. It may be at times harmless or even beneficial (Baumeister, 1991). The harm or benefit may be related to the method used for escape; for example, the use of spirituality or moderate use of alcohol may be seen as adaptive. However, the harm can be devastating, such as when the use of alcohol becomes addictive, or committing suicide.

Just knowing that there is a way to escape, or actually escaping occasionally, greatly reduces the stress of a given situation, even if in fact the person does not use that escape route. The participants in this study often felt that they did not have any way to escape their pain, or the effects that it had on their lives. Deriving regular respite from stress can be particularly important in reducing the need to escape a given situation, or the need to find a quick and powerful solution in a crisis situation (Baumeister, 1991). The strategy of temporarily escaping negative self-evaluation and affect is often taught to chronic pain patients through relaxation. This loss of self-awareness can also found through stimulating or creative work. However, the participants in the current study did very little that was not pain-related. They found it very difficult to immerse themselves in a task that enabled them to forget their pain or their problems, even for a short time.

Self-handicapping was another strategy used by the participants of the present study when they were unsure as to whether they would succeed. This is an example of a self-defeating trade-off. While it jeopardised their success, it did provide a useful excuse for failure, thus protecting their self-esteem. Methods of self-handicapping include not trying, or substance abuse (e.g., alcohol or painkillers). Another problem that occurred regularly for the participants in this study was that they did not adhere to their health-professionals' suggestions. In adhering to treatment instructions, they had to acknowledge that they were unwell. Therefore, in not following instructions, they could escape the awareness of their illness or injury. This resulted from the desire to avoid feeling bad about themselves, and related to their embarrassment. Many participants felt that to be injured or ill was bad, and that it indicated negative things about themselves as a person, their pain tolerance, or their willpower. At times, they took extreme action to avoid others knowing that they were in pain and the perceived negative evaluation.

The final step suggested in Baumeister's (1990a) theory of cognitive deconstruction is that of the

consequences of this behaviour, such as disinhibition, passivity, impulsivity, absence of emotion, and irrational thoughts. Disinhibition involves the removal of normal constraints, so that people may behave in ways that would normally be constrained by their inhibitions. The disinhibited person is not as cautious as they would normally be. This may result in sensation seeking behaviour. Of relevance to suicide is the fact that in this state the normal constraints to killing oneself may be removed.

Passivity is also a result of cognitive deconstruction. It maintains the cognitive deconstruction as the person avoids the planning, meaningful thought, and self-evaluation that they are attempting to escape (Baumeister, 1991). This passivity was often seen in the participants in this current study, leading to social isolation, a confounding of symptoms, and a lack of adherence to treatment. Baumeister (1990a) maintains that despite general passivity, cognitively deconstructed people are prone to a relatively low level of random, meaningless, and impulsive behaviour. This is because they are acting without thought and planning.

A lack of rational thought is often found in the cognitively deconstructed state. Such people do not think realistically or meaningfully. They are unable to clearly think or talk about the consequences of their behaviour, including non-compliance to treatment, or the consequences of attempting suicide. Their aim is to escape. Even with extreme self-destructive behaviour such as suicide, the desire may be escape, for the person may want immediate relief. They do not think of the consequences (Baumeister, 1991).

Other researchers have studied Baumeister's theory of cognitive deconstruction in relation to suicide and linked it to other areas. Ward *et al.* (1995c) successfully applied this theory to battered women. Binge eating and anxiety are also explained by the escape theory (Baumeister, 1990b; Heatherton & Baumeister, 1991). Other researchers have published empirical evidence for this theory. Dutton and Yamini (1995) studied adolescent suicide and reported that adolescents saw suicide as an escape. They linked this to cognitive deconstruction. Dean and Range (1999) found significant paths from socially prescribed perfectionism to depression, through hopelessness, to no reason for living, and suicide. They suggested that the escape theory of suicide is strongly supported.

4.2.3.7 Treatment

Many participants of the present study found that some of the treatments they engaged in improved some aspects of their chronic pain or disability to some extent, especially in the short-term. However, these benefits were not generalised, maintained, or substantial. Most of the participants in this study had not participated in multidisciplinary pain management.

Effective treatment of chronic pain generally needs to be holistic and multidimensional. It may require a multidisciplinary team. Research reviewed in the introduction to this thesis (section 1.6) suggested that while treatment may be effective in the short-term, the long-term gains are less clear and are dependent on which outcomes are measured.

Multidisciplinary treatment programmes are becoming more common. An example is a four-week in-patient cognitive-behavioural multidisciplinary pain management programme (described by Johans-

son, Dahl, Jannert, Melin, and Andersson (1998)). It includes education, goal setting, graded activity, pacing, relaxation, cognitive techniques, social skills training, drug reduction, contingency management of pain-behaviours, and return to work planning. Activity levels increased, and catastrophising and pain-behaviours decreased immediately post-treatment. At the one-month follow-up, activity level and occupational measures were observed to have changed positively. At the two-month and one-year follow-up, significant improvements were reported in the use of sick leave, pain-intensity, interference of pain, life control, affective distress, activity level, physical fitness, and use of medication (Johansson *et al.*, 1998). Based on this, and other research (eg., Okifuji, Turk, & Kalauokalani, 1999), multidisciplinary chronic pain treatment programmes were deemed to be successful. Changes in patient beliefs and coping strategies are thought to underlie improvements due to attendance of multidisciplinary pain programmes (Jensen *et al.*, 1994b). Okifuji *et al.* (1999) reported that multidisciplinary pain programmes result in greater clinical effectiveness and financial savings than surgery or conventional medical treatments. Behavioural treatment of chronic pain may also show long-term cost effectiveness (Dworkin, 1994). Tkachuk and Martin (1999) describe regular exercise to be a requirement if behavioural treatments are to be effective in reducing self-reported pain in chronic pain patients. However, differences in beliefs about treatment effectiveness exist. Sherman *et al.* (1987) suggested that many psychologically normal people with chronic pain do not benefit from psychotherapy, antidepressants, or other psychoactive drugs. It has also been suggested that the benefits of cognitive-behavioural treatment are confined to women, or at least that women are more likely to benefit from treatment (Jensen *et al.*, 1994a; Toomey, Taylor, Skelton, & Carron, 1982). Despite this, comprehensive treatments for chronic pain are said to be effective and improve outcomes by 40% to 50% when compared to controls. Goals usually include functional restoration (Arnoff & Feldman, 2000).

Interestingly, studies of chronic pain treatment effectiveness usually use statistical significance rather than clinical significance as an outcome measure. Therefore, if a study shows that improvement is 50% over controls this often means that many, if not all, the participants still suffer from chronic pain and/or disability. Some aspects of the participant's life may have improved, but for many, their pain or lifestyle will not have changed. Consequently, chronic pain health-professionals are often frustrated by the lack of clinical success of chronic pain treatments (Sherman *et al.*, 1987). Arnoff and Feldman (2000) reported that treatment often failed if people had a sense of entitlement, thought that they should be compensated, and did not believe they would suffer less if they were active and productive. This finding indicates that strategies to manage pain still need to be addressed (Abbott, Gray-Donald, Sewitch, Johnston, Edgar, & Jeans, 1992). It has been suggested that assessment of functioning involving measures of handicap and disability may be more effective predictors of chronic pain outcome than purely pain intensity (Talo, Puukka, Rytokoski, Ronnema, & Kallio, 1994). It is also important to note that treatment aimed specifically at reducing chronic pain, such as surgery, can in fact increase the pain (Walker, 1982).

4.2.3.8 Disability

Disability was a central concept in this chronic pain study. Disability had greater significance for the participants than pain intensity. Although both were related to each other, this relationship was not necessarily direct or linear. Chronic pain and disability are distinguished in the literature. Disability and the literature surrounding this concept are discussed below in relation to chronic pain.

DEFINITIONS RELATED TO DISABILITY

Pain is defined as an unpleasant sensory and emotional experience that is associated with actual or potential tissue damage (Chapman & Garvin, 1993). While chronic pain can result in disability, the relationship between pain and disability is not linear (Fordyce, 1994; Grant & Haverkamp, 1995). Arnoff and Feldman (2000) describe disability related to chronic pain as a “bio-psycho-socioeconomic phenomenon based on many non-medical factors such as workplace demands, emotional coping resources, age, environmental factors, education, and the individual’s anticipated capacity to carry out particular tasks or perform specified functions” (p. 167).

Pain is often associated with disability, loss of independence, and reduced quality of life (Arnoff & Feldman, 2000; Herr & Mobily, 1992). Many health-practitioners do not distinguish between impairment and disability (Arnoff & Feldman, 2000). The definition of impairment is based on a physical difference or difference in normal functioning. In contrast, disability is the inability of a person to meet their usual or desired level of functioning because of an impairment (Arnoff & Feldman, 2000). There is a difference between impairment, which is a loss in structure or function, and disability, which is a loss in the capacity to meet life’s demands. Disability may result from impairment, but the relationship is not linear (Monsein, 1990). Individuals differ in how they experience and react to pain (Monsein, 1990). Abbott *et al.* (1992) reported that impairment did not increase with time spent in pain.

Pain and suffering are not synonymous (Fordyce, 1994). However, they are related. They often occur together although a person can have one without the other (Chapman & Garvin, 1993). Pain alone can cause suffering, although it usually occurs in conjunction with physical, psychosocial, and economic problems (Chapman & Garvin, 1993). Suffering in chronic pain often causes a threat to the individual. Unfortunately this threat is usually not transient. Suffering is emotional, unpleasant, and psychologically complex. It can result from a perceived loss of physical, psychological, and social resources.

Disability is, in many ways, associated with autonomy. Autonomy is related to a person’s ability to take responsibility for their behaviour, to make their own decisions, and to maintain supportive relationships (Crittenden, 1990). Autonomy is dependent on the development of an internal locus of control, use of coping strategies, the maintenance of social supports, and the development of reciprocal adult attachments (Crittenden, 1990). These are many of the factors identified in this current study.

No single factor predicts disability. Rather, disability is a complex interaction between social, physi-

cal, occupational, developmental, interpersonal, psychological, and economic factors (Arnoff & Feldman, 2000). Disability is related to many pain factors. Compensation is one. After statistically controlling for physical damage, people seeking compensation reported more pain, greater disability, higher emotional distress, and greater life interference than those not seeking compensation (Turk & Okifuji, 1996). Disability predicts self-reported and observed pain-behaviour (Nicassio *et al.*, 1999). Disability is also dependent on the type of pain. For example, people with back and neck pains perceive themselves as more disabled than patients with other medical disorders (Arnoff & Feldman, 2000).

There is little evidence of a correlation between disease and functioning. Some people with many abnormal physical findings may function well, while others with little evidence of physical abnormality may be seriously disabled (Monsein, 1990). Therefore, a biopsychosocial model is needed to assess disability (Monsein, 1990).

The participants in the present study varied in their level of disability, and disability varied over time for each participant. Disability did not appear to be directly related to reported pain-intensity. Some participants described intense pain and yet a high level of functioning, and a low level of disability, while others reported the opposite.

EFFECTS OF DISABILITY

Through chronic pain, a person may not be able to perform normal activities. This affects occupational, family, social, and recreational activities. This dysfunctional behaviour may be reinforced, preventing the person from performing their normal activities despite being physically able to complete them. Family, health-professionals, compensation, and insurance systems can all provide reinforcement.

LITIGATION AND DISABILITY

Some of the participants in this current study reported receiving financial and other assistance from New Zealand's Accident Compensation Corporation (ACC). This was provided to cover treatment costs. Some participants additionally received ACC funded home-help. This may have reinforced their not attempting these household activities.

Litigation and compensation can greatly influence a chronic pain patient's experience of pain, disability, and impairment. The legal system often appeared random and capricious. It is vulnerable to the pressures of the lawyers and patients who exploit it. Awards for non-economic damages have been found to have little consistency (Weintraub, 1995). Chronic pain patients may have behavioural problems largely determined by: their medical condition, the consequences of their pain, and their social situation, including litigation status (Fishbain, Cutler, Rosomoff, & Rosomoff, 1994). In America, when determining legal disability, pain is considered to be a reason for avoiding work only when there is also physical or psychological impairment (Monsein, 1990).

4.2.3.9 Dysfunctional Chronic Pain

Some researchers have discussed what this study has labelled “dysfunctional chronic pain” (eg., Arnoff & Feldman, 2000; Sjölund, 1994; Walker, 1982). Sjölund (1994) also discussed the label of “dysfunctional pain” and reported that people who suffer from dysfunctional pain had a higher rate of maladaptive consequences than those suffering from pain due to a specific cause. Other researchers have discussed the concept of dysfunctional chronic pain as a label for chronic pain that has no specific or obvious cause (eg., Walker, 1982). The features of chronic pain with no obvious organic cause are described as follows: it is continuous, the person is preoccupied with pain, they repeatedly request surgical intervention, they deny interpersonal difficulties, and they have a history of excessive work performance and relentless activity prior to pain-onset (Walker, 1982). While the present study does not share this definition of dysfunctional chronic pain, it does share many of the other features described by researchers, particularly the consequences. Arnoff and Feldman (2000) use the label “chronic pain syndrome” for the concept that this study calls “dysfunctional chronic pain”. They suggested that this was not a diagnosis, but a description of people who suffer from chronic pain, show dysfunctional pain-behaviour, poor coping strategies, are limited in their activities, and show considerable life disruption.

4.2.3.10 Consequences

In the present study chronic pain had many consequences. These were wide ranging and included emotional, physical, occupational, personal, and social effects. Some effects were positive, but many were negative. The chronic pain process of the participants affected the consequences described in this theory. These consequences also affected how the participants continued to progress through their process of chronic pain management. Particularly, consequences appeared to affect adjustment to pain and implicit theories.

4.2.3.10.1 AFFECTIVE CONSEQUENCES

The participants in this current study reported mostly negative affective consequences associated with their chronic pain. The affective consequences appeared to vary in a positive relationship with pain-intensity and disability. This is discussed in some detail in the literature, which is summarised below.

Pain is usually an unpleasant emotional experience. The associated affective response is primarily negative. Anxiety and depression are commonly associated with chronic pain. Some authors suggest that chronic pain is a type of masked depression (Blumer & Heilbronn, 1982). While a number of chronic pain patients are depressed, it appears that their depression is generally secondary to their chronic pain. People who believe that they can function despite their pain and who maintain some sense of control do not generally become depressed. Affective consequences are often part of a cycle; they often intensify the pain experience, which can, in turn, increase the affective consequences. Affective difficulties are related to the number of physical symptoms reported (Costa Jr. & McCrae, 1985). Pain can be initiated or intensified by stress, fear, fatigue, or lack of sleep (Sherman *et al.*, 1987). Affect provides a useful means of guiding behaviour in order to survive. Negative affect can

be useful, however, it may cause difficulties in chronic pain patients. Affect expression can elicit responses from others, including obtaining social support. Some people try to hide their pain as they see it as a sign of weakness (Chapman & Garvin, 1993).

Affect intensity has been found to be related to a compulsive conforming personality style, poor adjustment, somatoform symptoms, hypomania, alcohol abuse, and psychotic thinking (Flett & Hewitt, 1995). Chronic pain patients often have higher affective than sensory ratings of pain (Price, Hawkins, & Baker, 1987). Interestingly, when people focussed on their pain, their affective ratings increased, although the sensory ratings remained unchanged (Price *et al.*, 1987). It is important to assess affective, in addition to sensory, components of chronic pain during assessment (Price *et al.*, 1987). The affective component of pain is powerfully influenced by psychological factors and perceived threat to health and life (Price *et al.*, 1987). It is clear that affect plays a central role in chronic pain (Rosenbaum, 1982).

Some chronic pain patients have alexithymic characteristics, in particular, the tendency to continually describe their pain and symptoms and a wish to remove these. These characteristics result from a basic inability to combine emotions with thoughts (Sifneos, 1982).

Biologically, researchers have described how the affective component affects chronic pain patients (eg., Chapman & Garvin, 1993). The affective mechanism of pain operates with the spinal cord transmitting noxious signals, which provide access to affective processing. The noradrenergic system in the locus coeruleus is also involved. It responds to threatening pain and non-pain signals. This often occurs in an anticipatory manner, compounding the effects on the patient (Chapman & Garvin, 1993).

4.2.3.10.1.1 Chronic Pain and Depression

Depression was one consequence of chronic pain that had a major impact on the functioning of the participants in the present study. Most of the participants described many symptoms of a Major Depressive Episode, as defined by the DSM-IV (American Psychiatric Association, 1994). These symptoms caused much distress to the participants and affected their adjustment to pain and disability. The depressive symptoms also affected the participants' beliefs, and choice of management strategies. It also affected other areas of their lives, particularly their relationships. The participants reported a high level of suicidal ideation. These factors are also established in the literature and are discussed below.

Living with untreatable pain is often depressing, so it is not surprising that chronic pain patients presented as depressed (Sherman *et al.*, 1987). Given the inherent difficulties of chronic pain, Turk (1996b) questioned why more chronic pain patients were not depressed. Pain has been reported to lead to increased depression (Feldman *et al.*, 1999; Grant & Haverkamp, 1995; Merskey, Brown, Brown, Malhotra, Morrison, & Ripley, 1985). Depression has been shown to play a role in initiating and controlling the intensity of pain (Sherman *et al.*, 1987). There is a high positive correlation between intensity of depression and intensity of pain (Feldman *et al.*, 1999; Sherman *et al.*, 1987).

THEORIES OF DEPRESSION

Many theories attempt to explain depression. The few that are related to chronic pain will be addressed briefly. The hopelessness theory of depression is one of these, and is related to a cognitive diathesis stress model (Abela & Seligman, 2000). According to this theory, three attributional styles contribute to “hopeless depression”: firstly, people tend to attribute negative events to stable causes; secondly, they perceive negative events as having many negative consequences; and thirdly, when negative events occur they tend to infer negative characteristics about themselves (Abela & Seligman, 2000). Negative and distorted views of self, the world, and the future are all interrelated and are related to depression. These negative distortions were found in both social and non-social situations (Giles & Shaw, 1987).

Empirical evidence has shown that mood-activated cognitive biases increase vulnerability to depression (McCabe, Gotlib, & Martin, 2000). Both non-vulnerable and vulnerable people show a protective bias when they are in a neutral mood. This may protect them from depression. However, vulnerable people lose their protective bias when they are in a sad mood. This may predispose them to depression (McCabe *et al.*, 2000). Blatt, Quinlan, Chevron, McDonald, and Zuroff (1982) have identified two different types of depression: “self critical” and “dependant”. Significant differences have been found between these two groups. Chronic pain may provide vulnerability and sad mood.

There are many references to the role of serotonin and noradrenaline in depression. These two neurotransmitters are believed to be involved in pain perception (Magni, 1987). These neurotransmitters may link chronic pain and depression at a biological level.

The rate of depression is high amongst chronic pain patients compared to other medical patients (Banks & Kerns, 1996). The diathesis stress framework can account for the psychological experiences of living with chronic pain including the high prevalence of depression (Banks & Kerns, 1996). Depression is related to self-control, cognitive distortion, and interference, therefore, a cognitive model of depression in chronic pain needs to include these factors (Maxwell, Gatchel, & Mayer, 1998).

RELATIONSHIP BETWEEN DEPRESSION AND CHRONIC PAIN

One difficulty associated with diagnosing depression and chronic pain is that many of their symptoms overlap. In addition, people experience a great variability in both their chronic pain and depression. Depressed people often present with symptoms that could belong to a range of physical disorders, including chronic pain. They do not necessarily present with sadness (De Wester, 1996).

Chronic pain has been described as an expression of, or closely related to, mood disorders. Some authors have labelled this a “pain-prone disorder” (eg., Blumer & Heilbronn, 1982). Blumer and Heilbronn (1982) describe chronic pain of uncertain origin as a form of masked depression. Pain-prone disorder has been described as a well-defined disorder with clinical, psychological, biographical, and genetic features (Blumer & Heilbronn, 1982). Blumer and Heilbronn (1982) describe it as related to, but distinct from, depression. They state that chronic pain is maintained by central rather than

peripheral mechanisms, and that it is not caused by, nor does it cause, depression. Rather, it is an expression of mood. They observed a number of characteristics which they associated with pain-prone disorder, including: hypochondriasis; a desire for surgery; idealisation of themselves, interpersonal relationships, and their family; an inability to verbalise feelings; long duration of pain; sleep, sexual, and social difficulties; depression; suicidal ideation and despair; hard work; family history of mental disorder and alcoholism; and a history of depression (Blumer & Heilbronn, 1982).

The participants in the present study frequently reported most of these factors. Magni (1987) discusses similar issues, although does not collectively call them pain-prone disorder. Magni (1987) suggests that in a specific group of chronic pain patients, their pain may be related to depression, even though depressive symptoms are not present along with their pain. The co-existence of chronic pain and depressive disorders has been supported by clinical, premorbid, psychodynamic, and biological findings. These include a family history of affective disorders, positive response to antidepressants, abnormal rapid eye movement latency, and dexamethasone nonsuppression (Blumer, Zorick, Heilbronn, & Roth, 1982). There is continuing debate about whether a pain-prone disorder is a variant of a depressive disorder. The research to-date suggests that this is probably not the case despite the factors they have in common (Rosenbaum, 1982).

Psychological factors, of which depression is one, are commonly involved in the development and maintenance of chronic pain problems (Herr & Mobily, 1992). With co-existing chronic pain and depression, it is often difficult to determine whether the stress of living with chronic pain has caused depression or whether the depression is the cause of some of the chronic pain symptoms. Either can be etiological for the other. Researchers have clearly linked chronic pain with a risk of developing depression (eg., Atkinson *et al.*, 1991). The vulnerability factors for chronic pain and depression are similar. Therefore, it may be that both difficulties caused by other independent factors. This does not preclude them from co-existing. Depression and chronic pain may coexist but be unrelated (Herr & Mobily, 1992). It may be that chronic pain and depression are both maladaptive responses to loss (Pilowsky, 1982). The symptoms of chronic pain may be confused by other difficulties, such as depression. This makes it difficult to attribute cause and effect (Magni, 1987). It is important to remember that while depression and chronic pain are often found to be associated, they need not be directly causally related (Magni, 1987). For example, as Magni (1987) said: "depression can certainly not be postulated as the underlying disturbance in all patients affected by chronic indeterminate pain" (p. 16). The idea that pain is merely a depressive disorder is further questioned by the fact that depression and chronic pain coexist in many cases (Rosenbaum, 1982). Pilowsky (1982) found pain syndromes to be distinct from depression. Depression is frequently secondary to chronic pain. However, evidence for this particular relationship remains controversial (Atkinson *et al.*, 1991; Magni, 1987).

Other researchers describe pain as being distinct from depression. Particularly, that chronic pain, even with the absence of obvious medical findings, is not a result of depression (Ahles, Yunus, & Masi, 1987). Rates of depression prior to pain-onset have been found to be average in chronic pain patients. Although, it is noted that patients with chronic pain that has no known medical cause have higher

levels of depression, anxiety, and hysteria than those with a known medical cause (Atkinson *et al.*, 1991; Magni, 1987). However, this finding does not prove that chronic pain is related to depression for these patients. The management of chronic pain when there is no clear diagnosis may be more stressful than when the cause is known.

The controversial issue of the nature of the link between depression and chronic pain remains, despite empirical research into the area (Romano & Turner, 1985). Pilowsky *et al.* (1977) reported that most chronic pain patients have few symptoms of depression. Despite this, some empirical support exists for the claim that pain and depression may coexist as an outcome of chronic pain (Romano & Turner, 1985). Patients with chronic pain have been found to report increased rates of depression compared with healthy volunteers (Almay, 1987). This linking of pain with depression may result from the methods in which both of these constructs are measured. Self-report health measures, which are often used in research, contain a high negative affectivity component. Therefore, there is likely to be an artificially increased association between health and negative affectivity, and other negative mood states, such as stress (Watson & Pennebaker, 1989). While negative affectivity is related to health complaint scales, it is not related to long-term health status (Watson & Pennebaker, 1989).

Some researchers have explicitly examined the relationship between chronic pain and mood. Affleck, Tennen, Urrows, and Higgins (1994) reported a relationship between events and the mood that occurred on the same day, but not between events and pain occurring on the same day, or between events and either mood or pain which presents on the next day. Exceptions to this were observed amongst those who had experienced recent major life stressors. Additionally, those with less social support showed a positive relationship between events and next-day mood (Affleck *et al.*, 1994).

There appears to be little controversy over whether mood and pain are related. Rather, the controversy surrounds how they are connected. This relationship maybe associated with how both chronic pain and depression are measured in research studies. In the present study, all of the participants exhibited symptoms that could be related to a depressive disorder. Many would have satisfied the DSM-IV criteria for a Major Depressive Episode (American Psychiatric Association, 1994). Most of this mood disturbance appeared to occur after the onset of chronic pain, although the participants had experienced affect regulation difficulties before the onset of chronic pain. This result may also be due to the retrospective nature of this study. All participants reported that their pain was distinct from their depression, although some of the symptoms overlapped. They also reported that their mood affected how they managed their chronic pain. These reported relationships support the idea that chronic pain and depression are distinct entities, although they may be related.

TREATMENT OF DEPRESSION IN CHRONIC PAIN

In the current study depression appeared to have an impact on the participants interpretation of pain and implicit theories, and thus it affected the management strategies they choose. Depression also affected their functioning and their level of disability. Therefore, the treatment of co-existing depression is probably important in increasing management, and reducing disability, in people with chronic pain. Notably, few participants in this current study received specialist treatment for their depression.

The diagnosis and treatment of depression in chronic pain patients can increase their quality of life and reduce their use of health-care services (De Wester, 1996). Statistically significant differences have been found between levels of depression in chronic pain patients and a number of factors; particularly coping skills, instrumental activities, level of perceived support, and discontinuing chronic pain treatment. Although, for people who finished treatment for their chronic pain, their treatment outcome was not affected by their level of depression (Kerns & Haythornthwaite, 1988). Disagreement exists in relation to whether treatment for depression is useful for chronic pain patients who do not present with co-existing depression. Magni (1987) reviewed the literature and suggested that when depression is treated with antidepressants an improvement in chronic pain is often noted. Additionally, when depression is treated with antidepressants, chronic pain can improve even without necessarily providing an improvement to their depression. Antidepressant medication can provide effective improvement for chronic pain patients who do not have depression. The means of this change is uncertain, although research has shown that tricyclic antidepressants have an analgesic action (Magni, 1987). Other researchers have found that these improvements are restricted to well-being, sleep, and activity, and that pain-intensity does not change (eg., Rosenbaum, 1982). It has further been claimed that chronic pain patients do not respond well to the pharmacological treatment of depression, unless they have strong features of depression (eg., Pilowsky, 1982), although this is a different result than that reported by Magni (1987). Different types of therapy, such as cognitive therapy instead of antidepressant medication, have been suggested as being useful for treating depression in chronic pain patients (Winokur, 1982).

EPIDEMIOLOGY OF DEPRESSION AND CHRONIC PAIN

Ahles *et al.* (1987), Magni (1987) and Merskey (1982b) reported that between 4% and 87% of chronic pain patients suffered from depression. Lifetime prevalence rates for depression range from 8% to 11% for men and 18% to 23% for women (Davison & Neale, 1990). Therefore, it is likely that chronic pain patients have a higher rate of depression, but this remains unclear from the above data. Depressed chronic pain patients are younger, have lower social desirability, report greater pain-intensity, greater interference due to pain, and more pain-behaviours than non-depressed chronic pain patients (Haythornthwaite, Sieber, & Kerns, 1991). For females, depression is related to pain-intensity, but for males it is related to functional impairment of activities (Haley, Turner, & Romano, 1985).

SUICIDE IN CHRONIC PAIN

Chronic pain patients are at greater risk of thinking about, attempting, and completing suicide than the general population, and non-pain patients. The development of suicidal ideation is related to pain duration. Reasons for this may be the link between depression and chronic pain, where severe pain has been found to relate to severe depression (Fishbain, 1996). Of the people who attempt suicide, those with chronic pain are more depressed than those without chronic pain (Fishbain, 1996). These facts fit into a diathesis stress model. Consistent with the literature, the participants in the current study had high levels of suicidal ideation.

ANXIETY, ALCOHOL USE, AND DEPRESSION IN CHRONIC PAIN

Chronic pain patients often report anxiety. The likelihood of anxiety was greater in those patients with depression (Krishnan, France, Pelton, McCann, Davidson, & Urban, 1985). Men with chronic pain have twice the normal rate of depression, and nearly twice the rates of anxiety and alcohol use disorder than the general population. Although alcohol use disorder usually precedes chronic pain-onset, depression does not (Atkinson *et al.*, 1991). Many of the participants in this current study described depression and anxiety and a few reported alcohol and drug use problems.

4.2.3.10.1.2 Chronic Pain and Anxiety

Many participants of this study described anxiety about their pain, particularly about the cause of their pain and whether their pain would increase, continue, or reduce over time. They also reported anxiety about other aspects of their lives. It is possible that the muscle tension associated with anxiety contributed to their pain.

There is a high correlation between intensity of anxiety and intensity of pain (Merskey *et al.*, 1985; Schnurr *et al.*, 1990; Sherman *et al.*, 1987). Anxiety may play a role in initiating and maintaining pain-intensity (Sherman *et al.*, 1987). Self-focussed attention influences, and is influenced by, social anxiety (Woody & Rodriguez, 2000). Self-focussed attention, in turn, is related to pain experience. It is interesting to note that Feldman *et al.* (1999) suggest that although pain leads to increased anxiety, anxiety does not contribute to increased pain. In fact, anxiety may decrease as pain continues (Merskey *et al.*, 1985).

Anxiety is related to self-reported health, however not to health as assessed by health-professionals (Costa Jr. & McCrae, 1980; McCrae, Bartone, & Costa, 1976). Anxious men reported more symptoms than were found by health-professional examinations. They also exhibited greater vigilance about their health than non-anxious men (McCrae *et al.*, 1976).

Anxiety and stress have been reported to contribute to the chronic pain of some patients (Monsein, 1990). Although this finding is different from that of Feldman *et al.* (1999) discussed above. Anxiety and stress can increase muscular activity. Muscle tension can lead to the constriction of blood vessels with a resultant reduction in oxygen and an increase in by-products and toxins, which may cause pain. This pain in turn increases fear and anxiety, thus completing a vicious cycle (Monsein, 1990). This is similar to the process involving anxiety and pain described by the participants in the current study.

4.2.3.10.1.3 Chronic Pain and Anger

Anger is a prominent emotion in chronic pain patients, although researchers have suggested that the presence of anger may have been underestimated due to denial (Burns, Johnson, Devine, Mahoney, & Pawl, 1998; Feldman *et al.*, 1999; Fernandez & Turk, 1995b; Philips & Grant, 1991). Anger may interfere with treatment and therefore treatment outcome (Burns *et al.*, 1998; Turk, 1996b). Anger expression and hostility affect pain severity, activity interference, and activity level (Burns *et al.*, 1996). The relationship between anger and hostility and pain and functioning is mediated by

whether it is expressed or suppressed and gender effects (Burns *et al.*, 1996). Feldman *et al.* (1999) suggests that anger does not contribute to increased pain. It was unclear, in the present study, from the participants' description of anger, whether anger contributed to their pain-level in this study. However, anger contributed to other difficulties that they experienced, particularly with their relationships.

4.2.3.10.1.4 Chronic Pain and Stress

Some of the participants in this study reported that their pain increased with increasing anxiety and stress, although this study did not investigate the possible physical cause of this. Many of this study's participants also identified loneliness as a contributor to the intensity of chronic pain. As also found by Arnoff and Feldman (2000), many of the chronic pain participants in this study had childhood trauma, unmet dependency needs, and a high level of responsibility, particularly for family members, in their childhood.

Stress is associated with chronic pain and can play a role in mediating the intensity of pain (Jensen *et al.*, 1991a; Sherman *et al.*, 1987). Stress regulation and pain perception systems are related. This may account for the high level of prior trauma in chronic pain patients (Arnoff & Feldman, 2000). The association between prior trauma and chronic pain is what some theorists have called a "pain-prone personality". A pain-prone personality may indicate the belief that it is now the patient's turn to be taken care of. This belief may result in delayed recovery. People with chronic pain often experienced traumatic early childhoods, such as physical and/or sexual abuse, unmet dependency needs, hyper-responsibility, and they were often caretakers at an early age (Arnoff & Feldman, 2000).

4.2.3.10.2 INTERPERSONAL AND SOCIAL CONSEQUENCES

A review of the relationship literature was completed earlier in this chapter (section 4.1.3.3) and will not be repeated, however interpersonal and social consequences will be discussed. The participants of this study reported several positive interpersonal and social consequences of their chronic pain. Despite this, it was normal for the participants to report a far larger number of negative interpersonal and social consequences. It is likely that chronic pain has both a positive and a negative impact on interpersonal relationships for each individual.

Pain is a subjective personal experience. The experience of pain has an impact on the person, creating limitations that are secondary to the pain (Monsein, 1990). The sick role offers respite from stress and stressful activities and entitles the person to attention and nurturance. While an injury that triggers the sick role may be trivial, this sick role is adopted, for a multitude of reasons. This role may be reinforced by nurturance for pain-behaviours, financial compensation, and the relief from unconscious conflicts, the pressure of success or family dynamics and depression (Rosenbaum, 1982). Cole (1993) says: "individuals who suffer from chronic pain are often suspected of receiving secondary gain from their pain and disability" (p. 191). Secondary gain may prevent a chronic pain patient from fully adjusting and from moving forward with life (Cole, 1993). Despite this, many chronic pain-behaviours that are considered psychiatrically maladaptive may in fact be biologically adaptive (Levy, 1984).

4.2.3.10.3 REDUCING PHYSICAL ACTIVITY AND PHYSICAL DECONDITIONING

Many of the participants in the current study discussed the effects of decreased activity and inactivity, particularly that of decreased muscle strength and muscle wasting. Some of the participants linked this to increased pain, usually due to muscle imbalance, and saw this as a vicious cycle. However, none of the participants in this study were physically or medically examined as part of this study. Therefore, this study relied on the participant's description and reporting of what they had learned from health-professionals.

Psychological and social factors may influence pain and disability by reducing physical activity and therefore muscle flexibility, tone, strength, and endurance (Turk, 1996b). While the initial biomedical factors have a decreasing effect on chronic pain over time, secondary problems related to deconditioning may continue to play a role. Inactivity leads to increased preoccupation with pain, which in turn increases the likelihood of misinterpreting symptoms, particularly overemphasising them. These factors increase the likelihood of people acting out a sick role and perceiving themselves to be disabled (Turk, 1996b). As Turk (1996a) states: "it is quite probable that the deconditioning resulting from reinforced inactivity can result directly in increased noxious sensory input. Muscles that were involved in the original injury generally heal rapidly, but due to underuse they become weakened and subject to noxious stimulation when called into action" (p. 88). Deconditioning increases pain, leading to greater underuse, and thus a cycle is created. This was clearly described by the participants in the current study.

4.2.3.11 Adjustment to Chronic Pain

Adjustment to chronic pain involves adjustment to trauma, loss, and coping with the consequences of chronic pain. Many of the consequences of chronic pain have a direct impact on adjustment. This is particularly true for some of the affective difficulties, such as depression. Therefore, this adjustment section needs to be read in conjunction with the above consequences section. Adjustment has a large effect on the management of chronic pain. It especially affects implicit theories.

4.2.3.11.1 COPING

The participants in this study reported using many different strategies in order to cope with and manage their pain and its consequences. Some of these were effective longer-term. Some, which were effective in the short-term, may have been maladaptive in the longer-term. As such some of these factors have been discussed above in section 4.2.3.6.1 addressing coping strategies under the management of chronic pain. This indicates how iterative this process is. The participants in this study were struggling with many of the tasks suggested by Miller (1983) which is outlined below.

The definition of coping generally refers to how well a person manages with their chronic pain. More particularly coping can relate to specific cognitive or behavioural activities that a person uses to restore equilibrium and relieve the problems of chronic pain (DeGood, 2000; Miller, 1983). Coping is designed to preserve physical and psychological integrity, and to reduce and compensate for loss, it

is used in times of threat. Coping is a process, not a single act (Miller, 1983). (Hallberg & Carlsson, 2000) discuss coping and suggest that: "coping aims at altering, managing or tolerating stressful situations and, therefore, coping should not be judged in terms of good or bad. Rather, long-term effects on well-being, social, and psychological functioning should be considered. However, passivity, escape behaviours and resignation/catastrophizing, at least in a long run, are dysfunctional to the individual and might end up in chronicity of pain" (p. 35). Coping is effective when it preserves integrity and function and reduces uncomfortable feelings. It has also been said to be effective when it limits distress, generates hope, maintains a personal sense of worth and relationships with others, and enhances recovery (Miller, 1983). However, in terms of outcome for chronic pain, its long-term effects are probably more important than its short-term effects. Psychological interventions seldom cure pain, but they can help people to manage and cope with their pain. Psychological adjustment and appropriate functioning are positive outcomes of good coping. Unfortunately, more is known about how people cope poorly with pain than about how they cope well. Effective coping can at best be predicted erratically (DeGood, 2000). Despite this, coping strategies mediate psychosocial adjustment, and therefore mediate pain (Garofalo, 2000).

Coping is affected by intrapersonal (including beliefs and skills), environmental (including interpersonal and financial), and illness-related (including type of illness and progression) variables (Miller, 1983). Tasks employed by chronically ill people to cope include striving to feel normal, modifying routines and lifestyle, obtaining knowledge and skills for self care, maintaining a positive self-concept, adjusting to altered relationships, grieving losses, managing role changes, managing physical discomfort and treatment, dealing with social stigma, feeling in control, and maintaining hope (Miller, 1983).

4.2.3.11.2 TRAUMA, LOSS AND STRESS

The participants in the present study experienced a range of traumatic events. They also described great difficulties in communicating, particularly about their negative emotions. Difficulties in communicating about traumatic events may have predisposed the participants in this study to develop chronic pain.

There are many different processes in response to loss. These also have biological mechanisms. Who, or what, has been lost needs to be examined. This helps determine the bereavement reaction, in this case to pain and its losses (Hofer, 1984). Loss components of a pain syndrome include unresolved grief, family dynamics, insurance of attachment, addiction, depression, somatisation disorder, psychogenic pain, and conversion disorder (Rosenbaum, 1982). The concept of loss will be covered in more detail below.

The concept of stress has been covered in detail above in section 4.2.3.10.1.4. This section is summarises stress and its relationship to trauma. Family and job-related stress have been reported to modulate pain. Environment and social stressors have been reported to be higher in chronic pain patients. This includes family conflict, family control, distress, and stress (Feuerstein, Sult, & Houle, 1985). Characteristics of the family and work environment best predict affective and evaluative dimensions

of pain. Increased family conflict is related to increased pain and distress. Family independence is also related to increased pain, but decreased distress. Pain is associated with less peer cohesion, physical comfort, and job clarity. Work pressure is associated with decreased depression and pain (Feuerstein *et al.*, 1985).

Failure to confide in others has been reported to be related to stress and disease (Pennebaker, 1985; Pennebaker & Beall, 1986). A model of psychosomatics suggests that stress and disease is related to a person inhibiting their thoughts, feelings, or behaviours. This has been found to be especially true with traumatic events. Researchers have found that actively confronting traumatic experiences can be physically beneficial (Pennebaker, Kiecolt-Glaser, & Glaser, 1988). Writing about a traumatic event, while it may increase blood pressure and negative mood in the short-term, has been related to fewer health-professional visits in the following six-months (Pennebaker & Beall, 1986). Talking about traumatic events reduces short-term autonomic activity and reduces risk of disease (Pennebaker, 1985). People who do not express their thoughts and feelings about a traumatic event have an increased vulnerability to long-term illness. Thus, traumatic experiences influence physiological activity and disease over a period of time (Pennebaker, 1985). Certainly, the participants in the present study did not express their thoughts and feelings effectively.

Post-traumatic stress disorder (PTSD) is common in chronic pain patients (Chibnall & Duckro, 1994). Some researchers have postulated that post-traumatic stress may cause chronic pain in some people (eg., Muse, 1985). This argument is proposed because benign chronic pain often has a substantial psychosocial basis, and it often responds well to treatment designed for stress-related disorders. By way of example, systematic desensitisation often provides relief of trauma symptoms in chronic pain patients (Muse, 1986).

PTSD has a higher prevalence among injured than uninjured survivors of a traumatic event. In fact, pain associated with a physical injury can itself be the traumatic event (Chibnall & Duckro, 1994). Some difficulties, such as depression and anger, are greater in chronic pain patients with PTSD than without (Chibnall & Duckro, 1994). Secondary stressors can be uncontrolled pain, anxiety associated with this, uncertainty about the future, and loss of control. These factors play a role in PTSD (Muse, 1986; Schreiber & Galai-Gat, 1993). Ability to withstand trauma depends on one's ability to cope (Miller, 1983). Trauma, bereavement, and loss, have been found to overlap, although they are different in many ways. For example, trauma research does not address different components in the stressor, whereas bereavement addresses the loss, as well as secondary stressors, which influence coping (Stroebe, Schut, & Stroebe, 1998). The concepts of loss and trauma will now be examined.

4.2.3.11.2.1 Loss

This section discusses the types of loss, the effect of loss on treatment for chronic pain, and specifically discusses the loss of work, which was common in the participants in this study.

TYPES OF LOSS

The participants of this study discussed losses in many different areas of their lives. They had many different reactions that could be related to loss. These will be discussed in more detail below together with the associated literature.

Chronic pain patients experience many different types of loss. These include personal and interpersonal loss, loss of sense of self, and loss of control. Interpersonal losses can include relationships, employment, and an active social life (Kelley, 1998). A decrease in physical function can lead to disruption in work, financial, family, and community roles. This can lead to increased helplessness, dependency, and loss of self-identity (Lyons & Sullivan, 1998). These losses often extend to, and include, the person's family (Kelley, 1998).

Chronic pain has negative social and psychological impacts (Kelley, 1998). Chronic pain patients often feel that their pain had been discounted and its authenticity questioned by both their family and health-professionals (Kelley, 1998). The participants in the present study often reported that others, including friends, family, and health-professionals, did not believe in their pain. This affected their relationships with these people, often leading to withdrawal and isolation. While this withdrawal was usually initially from a particular person, it often became more general, reducing the participants' social interactions.

Consistent with the participants of the present study, the literature also found that loss and disruption to relationships is common in people with chronic pain. This was a major issue for the participants in the current study, with the participants often becoming very isolated due to the loss of their few relationships. They also had existing difficulties with trust, fear of rejection and developing relationship, which was exacerbated by their pain and its difficulties. Lyons and Sullivan (1998) state that "the degree of loss associated with health problems and disabilities is directly related to the number and severity of unresolved relationship stresses in the family, in friendships, and in the workplace ... relational concerns have been identified as a major stressor in coping with disability or illness" (p. 137). Chronic pain patients often fear rejection and loss of valued relationships. These fears can lead to counterproductive activities and a consequent worsening of chronic pain (Lyons & Sullivan, 1998). Chronic pain violates the unspoken relationship contract, which was created when both parties were healthy. Breaking of this unspoken contract can cause fear that the relationship will be lost, especially if significant others deny the pain (Lyons & Sullivan, 1998). The loss of relationships usually occurs when the chronic pain patient requires the most social support. Managing social relationships requires much energy, which is often lacking in chronic pain patients (Lyons & Sullivan, 1998). As Lyons and Sullivan (1998) state: "for some individuals social withdrawal may be the less stressful adaptational option" (p. 143). Because the process of adjustment usually leads to lowered self-esteem, many chronic pain patients do not enter into new relationships because they consider them too risky. They also can feel fragile and over react to unhelpful comments from well meaning people. Communication is often difficult for chronic pain patients who may need to educate others about their difficulties and needs. They also have to decide whom to tell what, and when (Lyons & Sullivan, 1998). Social support is tied to reciprocity, equity, power, giving, and receiving. This balance is often upset with

the onset of chronic pain (Lyons & Sullivan, 1998).

Relationships and social networks affect chronic pain. Relationships are an integral part of self-identity, and they affect how people think and feel about themselves (Lyons & Sullivan, 1998). Changes in social network structures include decreased size, frequency of interaction, number of friends, and increased rates of divorce. Changes in relationship functioning include reduction in activities of companionship, and discomfort in communication and support processes. Changes in relationship quality include difficulties in negotiating relationship constraints.

Significant change was reported in the intimate relationships of the participants in this present study. They often reported feeling rejected by significant others. Many of the participants attributed this directly to the onset of their chronic pain. The development of chronic pain is likely to have been a contributing factor in this disruption of relationships. But, it is likely that the consequences of chronic pain, including changed roles in the relationship, contributed most to the disruption. The participants found that their relationships were often the first casualty of their reduced energy and changed roles. They appeared to expect others to provide all the giving and they expected to do all of the receiving, rather than adhering to normal relationship rules of equality and reciprocity. This difficulty was enhanced by the development of their chronic pain. The participants also spoke of not having the energy or self-confidence to resume relationships or to develop new relationships. Many participants had very few interests prior to the onset of their chronic pain, and struggled to identify situations where they might meet new people. If they did identify such situations, they often struggled to participate in these activities and meet people. Many participants were not socially confident or competent, even before the onset of their chronic pain and they feared rejection. Effective communication was particularly challenging for the participants. Again, this pre-dated the development of their chronic pain. Many participants were embarrassed by their chronic pain and/or its consequences, which was further isolating. They often struggled to communicate their needs to others, often choosing not to tell others about their chronic pain and limitations. Instead they avoided people. As a result, there were numerous relationship changes for the participants in this study. The changes included a reduction in the number of relationships, and changes in the nature of relationships. The participants found the loss of relationships particularly distressing and difficult to adjust to.

Harvey and Weber (1998) describe the importance of loss by saying "loss is pervasive in our lives" (p. 319). Pain activates issues of loss of health (Snyder, 1998). Different people experience loss differently. Lavalley, Grove, Gordon, and Ford (1998) discussed the importance of loss for athletes as follows: "in particular, competitive athletes whose self-identity is dependent on sport are prone to experience a symbolic loss following an injury ... sport involvement is often an intense, important, and self-defining activity for serious athletes" (p. 250). For the participants of the current study, feelings of loss were common and the impact deep and longstanding. Loss encompassed a wide range of areas in their lives, particularly relationships, and sporting or physical activities.

Chronic pain can present as a constant source of loss (Kelley, 1998). People with chronic pain experience greater loss and depression than those without chronic pain. They have lower self-esteem, self-confidence, and feel more alienated (Kelley, 1998). In addition, if the chronic pain is invisible,

it is often not taken seriously by health-professionals or the person's family. This lack of support increases stress (Kelley, 1998). One type of personal loss is the person's sense of self. Chronic pain patients often experience the loss of their old selves. There is often a loss of privacy, independence, self-concept, functioning, and control. This can leave the chronic pain patient feeling powerless and having lost a sense of who they were (Kelley, 1998). There is regularly a loss of vocation, including time off work, work changes, unemployment, and loss of income. Losses also include loss of mobility, energy, comfort, physical activity, sleep, concentration, memory, independence, such as being able to drive, comfort in social situations, and loss of lifestyle. Most chronic pain patients stop work because of their disability (Lyons & Sullivan, 1998). Chronic pain patients are increasingly pessimistic about their ability to perform, and their occupational future (Kelley, 1998). Loss can be described as a disruption to attachment (Kelley, 1998). The participants of the present study described most of these effects of loss. The disruption to attachment may be particularly important due to their existing fearful attachment. This was discussed in section 4.1.3.1.

REHABILITATION/TREATMENT OF CHRONIC PAIN WITH RESPECT TO LOSS

Many participants of the current study described difficulties with loss. Asking for help provided a major difficulty for the participants, and this impacted on their chronic pain management. They had to learn to adjust to their loss of independence. Social and intimate relationships were casualties of their chronic pain.

The rehabilitation of chronic pain patients needs to nurture a new self-image and help the person gradually learn and practice new skills (Kelley, 1998). Different people have proposed and examined different themes to treatment and rehabilitation to trauma, loss, and adjustment. Kelley (1998) described three themes in the adjustment process: firstly, a search for meaning; secondly, an attempt to regain mastery; and thirdly, an effort to restore self-esteem. This adjustment process may involve creating illusions and the use of downward comparisons. Kelley (1998) stressed the importance of loss in chronic pain, saying that chronic pain patients "go through a grieving process where they first mourn the loss of their old self and then go on to rediscover a newly developed sense of self. The importance of discovering strengths, of recognizing that the condition is one part of their life not their whole life, and of adapting to the new life is underscored" (p. 209). People who find positive meaning and identify benefits to their traumatic situation have been found to cope better than those who do not. Also, those who take some responsibility for these negative events also cope better, possibly because of their sense of control. It should be noted that Kelley's (1998) research was conducted with participants who experienced a one-off negative traumatic event. This may be different for chronic pain patients (Kelley, 1998). Despite this, the participants in this current study appeared to go through a similar adjustment process, with similar factors affecting their progression through their trauma and loss.

Reducing relationship stress, and finding mutually enjoyable activities, may be essential if relationships are to survive chronic pain (Lyons & Sullivan, 1998). Hope may also play a critical role in moderating the loss and suffering associated with chronic pain (Snyder, 1998). Hope involves a sense

of agency and routes to goals. Hope may be trait-like, applying across a range of differing situations, or state-like, applying to different situations at different times (Snyder, 1998). Some chronic pain patients have been found to be "more perfectionistic and independent, and that is why it is so difficult for them to learn to let go of chores and ask others for help" and therefore be able to cope with their loss and adjust to their situation (Kelley, 1998, p. 208). This was common with the chronic pain participants in the present study, most of whom exhibited perfectionistic tendencies and found it very hard to ask for, or accept, the help of others. They also failed to adjust adaptively to their changing relationships. These relationships usually ended, and as a result the participants became isolated and lonely. Suffering reflects how a person manages pain in the context of activities of daily living, and the sense of loss felt (Snyder, 1998). It is often confused with pain, but they are different concepts. Suffering is not just a reaction to pain. It has greater complexity and involves psychological processes (Snyder, 1998).

WORK AND LOSS

The participants in this study all described disruption to their working lives. Many were subsequently unemployed or they experienced marked changes their employment. This had far ranging consequences involving many aspects of their lives.

Work is important for mental health, and loss of employment can produce mental health problems. These include increased depression, anxiety, suicide attempts, alcohol abuse, and violent behaviour, and decreased sense of self-competence and self-esteem (Price, Friedland, & Vinokur, 1998). Loss of jobs is a transition in life and, as people negotiate life transitions, they often rely on their social relationships. When people cease their employment they often lose a large part of their social network (Price *et al.*, 1998). Job loss also involves the loss of a social role, which is often linked with status. It frequently involves losses in friendships and social support. The impact of losing a job differs for different people depending on the type and quality of their social relationships, and how they use them. Loss in friendships can cause erosion in mental health. A strong social network decreases the likelihood of depression, anxiety, somatisation, and physical illness (Price *et al.*, 1998). Job loss also affects the unemployed person's family. It has been linked to marital dissolution and economic hardship (Price *et al.*, 1998). Jobs are related to personal identity. Unemployment is a social stigma (Price *et al.*, 1998). The participants in the present study all experienced difficulties with their changing employment roles. Many became unemployed. For the participants in this study, employment was central to their definitions of themselves. Many held very negative views of unemployed people, and thus were dedicated not to be viewed as unemployed. Work provided one of the main sources of social interaction for the participants. Therefore, when the participants were no longer able to work, they often lost their self-identity and their entire social network. Some of the participants described depression directly related to loss of employment or change in one of their many roles.

A sense of mastery and competence is often present in the social role of a provider. Job loss disrupts this role. This role change brings about modifications in the status of the job loser within their family, and consequently family power dynamics change. This may cause family conflict, which can

threaten interpersonal relationships. The role change also causes strain on parent-child relationships. Perceptions of mastery are critical to sustaining mental health (Price *et al.*, 1998). Work was often one of the only tasks that the participants in the present study felt effective at, and they often had spent large amounts of time working. Both they and their families struggled to adapt positively to this change in occupational role, with separation often occurring.

4.2.3.11.2.2 Trauma in Chronic Pain

The participants of the current study described many symptoms indicative of post-trauma, including fear, avoidance, and hypervigilance. Trauma may account for the presence of many of the symptoms and effects of chronic pain. For chronic pain to be effectively managed, it is important that symptoms of trauma are diagnosed and treated.

Post-traumatic stress disorder (PTSD) is strongly predicted by trauma severity, lack of social support, and additional life stress. It is less strongly predicted by gender, age at trauma, race, education, previous trauma, childhood adversity, childhood abuse, psychiatric history, and family psychiatric history (Brewin, Andrews, & Balentine, 2000). PTSD and chronic pain are positively related. This might explain the high rate of anxiety and emotional reactivity in chronic pain patients (Arnoff & Feldman, 2000). Asmundson, Bonin, Frombach, and Norton (2000) classified chronic pain patients into three categories: 12% were classified as dysfunctional, 18% as interpersonally distressed, and 41% as minimisers/adaptive copers. Differences were observed between these groups, including fear of cognitive and emotional dyscontrol, symptoms of PTSD, and incidence of depression. Seventy-one percent of dysfunctional chronic pain patients, 43% of interpersonally distressed chronic pain patients, and 21% of the minimisers/adaptive copers were classified as having PTSD. This suggests that chronic pain may be related to trauma and methods of coping. Dysfunctionally coping chronic pain patients exhibited an increased level of pain-specific fear and avoidance compared with those not classified as dysfunctional (Asmundson *et al.*, 2000).

ABUSE IN CHRONIC PAIN

Chronic pain is related to abuse and the trauma of abuse. Nearly half of Drossman, Leserman, Nachman, Li, Gluck, Toomey and Mitchell's (1990) female gastrointestinal patients reported a history of physical or sexual abuse. Many had not disclosed their abuse and only a few had informed their doctors. Abused patients are more likely to report pelvic pain. They report an increased number of symptoms, and undergo more surgery (Drossman *et al.*, 1990). Many participants in this current study reported abuse as a child.

4.2.3.11.3 PREDICTION OF ADJUSTMENT TO CHRONIC PAIN

Psychosocial factors are related to illness-behaviour and may influence recovery from trauma (Radanov, Di Stefano, Schnigrig, & Ballinari, 1991). They may not affect recovery from all painful conditions. Psychosocial factors, negative affectivity, and personality traits do not affect recovery from whiplash (Radanov *et al.*, 1991). Initial pain-intensity, injury-related cognitive impairment, and age have been

found to be predictors of illness-behaviour (Radanov *et al.*, 1991). Continuation of pain-behaviours after healing is a significant marker for future chronic pain (Knotek *et al.*, 1997). Many indicators of treatment improvement should be used to get an accurate assessment of this (Toomey *et al.*, 1982). The topic of prediction of chronic pain was covered in detail in the introduction (section 1.5).

4.2.4 SUMMARY OF THE ACUTE PAIN AND CHRONIC PAIN MANAGEMENT DISCUSSION SECTIONS

Many of the factors identified in the acute pain or chronic pain management phases of this model are confirmed through empirical evidence discussed in the pain, health, or general literature. The central concepts of the acute pain phase of this model revolve around treatment-seeking, adherence, and outcome. These concepts are influenced by the participants' existing vulnerability factors, their implicit theories, and impeding factors. Similar factors were important in the management of chronic pain and disability. The factors affecting the use people make of treatment and the factors that affect this were discussed, in particular, the relationship between health-professionals and patients, including the role of satisfaction, adherence to treatment and communication. This included a discussion of the models of the health-professional-patient relationship and the roles of health-professionals. Psychological factors that affect treatment behaviour were outlined. These factors were discussed regarding the difficulties that the participants of this study had, particularly their relationships with health-professionals. The participants were generally dissatisfied with most of the treatment that they received. They reported difficulties with a lack of information and feeling misunderstood by health-professionals. As a result of a lack of understanding and/or motivation, they regularly did not adhere to treatment prescribed. This was usually because it did not fit with their implicit theories. The participants often had a different understanding of the cause of their pain, and the treatment that they thought was best, than those they believed their health-professionals held. The participants were not able to communicate this effectively with their health-professionals. Instead, they often sought help from different health-professionals when the treatment did not meet their expectations. The participants appeared to be most satisfied, and adhered most highly to their treatment, when they were in a collaborative relationship with their health-professional.

People who have chronic pain do not all need exactly the same pain management strategies. It is particularly important to identify the salient factors for each individual, so they can best manage their chronic pain, experiencing as little disability as possible. It is also important to note that while most of the factors differ between people, they also differ over time with the same person. As their pain progressed, the participants changed their implicit theories and management strategies. The participants' implicit theories were one of the most important factors in influencing management strategies, as they influenced decisions and behaviour. Implicit theories changed over time. The participants demonstrated many cognitive errors and distorted thoughts. The role of catastrophising was particularly important. This had a negative impact on chronic pain management and outcome. The participants' perceived abilities to predict and control their pain were also important cognitive factors influencing the implicit theories. In addition to implicit theories, affect regulation, significant others,

and social support all played important roles. The literature discussing these areas was outlined. Significant others appeared to sometimes reinforce pain-behaviours, rather than well-behaviours, further influencing the management strategies the participants chose. The management of pain was also significantly influenced by their health-professionals' style. The participants' personal progress along the treatment path and their impeding factors also influenced the management of their chronic pain. Thus, there were many factors that influenced the participants' choice of a strategy to manage their pain. These were discussed with regard to coping and functioning. The construct of cognitive deconstruction was examined because it could account for many of the participants' experiences. A discussion of multidimensional treatment was presented. This needs to be read in conjunction with the in-depth discussion of treatment presented in the introduction of this thesis. An outcome results from the implementation of a management strategy. This is measured in terms of disability and the functionality of chronic pain. There were consequences to these outcomes. Affective consequences, including depression, anxiety, and anger were discussed. Social and interpersonal consequences were briefly considered; they were discussed in depth earlier. The consequences of physical deconditioning were also noted. The participants adjusted to their chronic pain. The discussion of adjustment included the topics of coping, trauma, loss, and stress. Feedback from the outcome, consequences, and adjustment affected the participants' implicit theories and their pain experience. This cyclical process continued as the participants managed their chronic pain.

4.3 SUMMARY OF THE MODEL OF THE DEVELOPMENT AND MAINTENANCE OF CHRONIC PAIN AND DISABILITY

All of the participants' vulnerability to chronic pain was based on their background factors. A high level of vulnerability factors increased the risk that they would continue down a path to develop chronic pain and disability. When vulnerability factors were high, this did not necessarily pre-dispose the participant to develop an illness or injury that caused pain, but when they did experience pain, these vulnerability factors increased the likelihood that they would develop chronic pain. These vulnerability factors were active in the first six months after the onset of pain and they continued to influence how a person managed their pain through the chronic phase. Generally, people who later developed chronic pain, initially delayed seeking treatment. They commonly did not understand, or agree with, the treatment prescribed and therefore they did not adhere to the treatment. Their outcome was negative, including a high level of disability. In the first six months, they repeated this cycle, often many times. This process was influenced greatly by their implicit theories. Cycling through this process influenced their outcome. The vulnerability factors continued, and helped to maintain the chronic pain status. They became maintaining factors. In the chronic pain phase of this model, these pain and disability maintaining factors influenced the individual's management of chronic pain, often over a large number of years. They particularly moulded the implicit theories that strongly influenced the chronic pain sufferers' management of their chronic pain. The participants chose a strategy, depending to a large extent on their implicit theories, and a number of other variables. The strategy chosen, and the chosen method of implementation, affected the outcome and level of disability, and also the

consequences of the outcome, to which the participants then adjusted. Providing that they still had pain, this led them to continue through this cycle, which usually repeated many times over a large number of years.

In order to prevent and treat chronic pain, it is important that the factors that aid the development and maintenance of chronic pain are identified and managed. These are different for each individual, and will therefore always need to be assessed individually, and a management strategy developed specifically for each person. The prevention, or management, of chronic pain can be addressed at a number of different stages. In an ideal world, the general practitioner would be able to identify the vulnerability factors, perhaps via a checklist. (See appendix D for a possible example of a checklist). They could then be managed before a person developed acute pain. This intervention could also help prevent other disorders that are associated with similar vulnerability factors. However, for these vulnerability factors to be appropriately identified, assessed, and managed in the general population, considerable resources would be required. A more practical option would be to assess vulnerability factors of all people presenting to a health-professional with acute pain. This obviously would not overcome the difficulty of those who do not present to a health-professional. However, if the people with a high level of vulnerability factors were identified at this early stage of acute pain, and these vulnerability issues were addressed, this could greatly reduce the number of people who progress to chronic pain. These vulnerability factors may not necessarily need to be solved. It may be sufficient for people to receive the management that they needed in order to resolve their pain issue and, therefore, not develop chronic pain. For those people already suffering from chronic pain, understanding and addressing the maintaining factors and processes would increase the likelihood that their chronic pain would resolve, or at least that they would be able to function at a higher level and, therefore reduce the disability associated with their chronic pain. Assessing the maintaining factors for chronic pain would need to be performed at regular intervals as these factors change, for each person, as chronic pain progresses.

4.4 DISCUSSION OF EXISTING THEORIES RELATED TO THIS STUDY

In the introduction to this thesis, many theories of pain were reviewed, some of which were supported by empirical evidence. Most were not integrated into a coherent explanation as to how chronic pain develops or is maintained. Instead, they usually focussed on only one aspect of the chronic pain experience. The current proposed theory for the development and maintenance of chronic pain and disability can accommodate and integrate many of the existing theories of chronic pain, both single and multifactorial theories.

The current theory incorporates operant or learning theories (eg., Craig, 1978; Fernandez & McDowell, 1995; Flor *et al.*, 1990; Flor & Birbaumer, 1994; Fordyce, 1974a, 1974b, 1976, 1978; Rose *et al.*, 1992; Roy, 1985; Sternbach, 1974a; Turk, 1996a, 1996b; Turk *et al.*, 1985; Turkat & Noskin, 1983; Violon, 1985). Learning occurred from others' reactions to pain when the participant and others experienced pain. The background / vulnerability section described how the participants learned about managing pain from their own experience of illnesses and pain, and others' reactions to these, and

from the pain and illness of others. The participants in the present study appeared to have many role models for pain-behaviour within their families, and many participants had experienced several previous painful conditions. Not only did they learn about pain-behaviour from a modelling or reinforcing perspective of behavioural models, but they also developed beliefs about pain and responses to pain from these experiences.

The participants of the current study exhibited many of the distortions that are suggested in cognitive theories of chronic pain (eg., Beck *et al.*, 1979; Becker *et al.*, 1977; Duckworth *et al.*, 1997; Knotek *et al.*, 1997; Leventhal *et al.*, 1980, 1992; Turk & Rudy, 1992; Williams, 1997). Catastrophising, an integral part of cognitive theories, was clearly demonstrated by the participants in this study. Not only were the participants' pains negatively interpreted, but many of the participants also appeared to see the behaviour of others and the world in a negative light. Implicit theories pertaining to the nature of pain, illness, responses of others, and the world were integral to the development and longer-term maintenance of chronic pain and disability in this theory. Many of the participants also described a change in the way that they processed information, particularly pain-related information. This fits with information processing cognitive theories of chronic pain. Learning and cognitive factors contributed markedly to the development and maintenance of chronic pain and disability by affecting the decisions the participants made about management strategies. They were part of a complex cyclical process of chronic pain and disability, affecting, and being affected, by other factors.

There was significant evidence in this theory for family and environment theories (eg., Flor *et al.*, 1987b; Fordyce, 1976; Melzack & Scott, 1957; Peyrot *et al.*, 1993; Rowat, 1985; Roy, 1985; Roy *et al.*, 1982; Sternbach, 1974b; Szasz, 1955; Turk, 1996b; Violon, 1985; Walco & Dampier, 1987; Whitehead *et al.*, 1982). The participants' background was characterised by illness, injury, major events, and perceived rejection by parents and significant others. This led to a negative view of themselves and others. Also significant in the background / vulnerability section of this theory was the participants' social isolation and difficulty with interpersonal interactions, which were present from an early age. The participants' families were characterised by dysfunctional communication, conflict resolution, affect regulation, and self-regulation. This family situation, in addition to poor social competence, prevented the participants from learning appropriate skills in their early lives. At the same time, pain-behaviours led to social reinforcement. Pain in some families had a distinct social and communicative role, and it became an acceptable way of getting needs met. This is consistent with many family, social, environment, and communication theories. Consistent with psychiatric theories, many of the participants of this study had psychiatric difficulties, particularly depression. However, it is important to note that these difficulties did not, in isolation, lead to the development or maintenance of chronic pain or disability. Rather their contribution was part of a complex cyclical process.

Mikail *et al.* (1994) advocated an attachment theory for chronic pain. This theory describes how attachment style might influence chronic pain-behaviour, particularly treatment-seeking and adherence behaviour. The role of attachment style is clearly demonstrated in this study, as it provides a basis for the other difficulties that occur. Attachment style influences all stages of this theory. An insecure at-

tachment style sets the background for the development of chronic pain. It provides a fertile substrate for the difficulties the participants encountered in the treatment of their acute, and later chronic, pain. An insecure attachment style increased the likelihood of the participants developing chronic pain and the chronic pain being maintained. These findings are consistent with the treatment difficulties that Mikail *et al.* (1994) discussed.

The current study is also consistent with the gate control theory, one of the major, well used, and longstanding theories of chronic pain (Melzack, 1993; Melzack & Wall, 1965). The factors discussed in the currently proposed theory clearly fit within the motivational-affective, sensory-discriminative, and cognitive-evaluative dimensions that the gate control theory proposes. The theory that is presented in this study initially appears to be very different from the gate control theory; this is because it functions at a different level. The currently proposed theory is that of a process, or micro model. It details the process that the participants follow from prior to pain-onset, through their acute pain, to the management stages of their chronic pain and disability. The currently proposed theory adds richness and detail about how these different motivational-affective, sensory-discriminative, and cognitive-evaluative dimensions interact with each other, the person, and the world. The currently proposed theory clearly outlines the process different people might take in developing and managing their chronic pain and disability.

Many of the multifactorial theories of chronic pain and disability in the literature can be integrated into the theory created in this study. The cognitive-behavioural theory emphasises thoughts and feelings and the impact these have on behaviour (eg., Flor *et al.*, 1990, 1992; Mikail *et al.*, 1994; Newton & Barbaree, 1987; Roy *et al.*, 1982; Schmidt, 1985; Schwartz *et al.*, 1985; Turk, 1996a, 1996b). This emphasis is very similar to that given by the current theory to implicit theories. Implicit theories influence the strategies chosen (behaviour), and the resultant consequences, some of which are affective. Also consistent with cognitive-behavioural theories is the influence of cognitive distortions, other maladaptive cognitive processes, and illness beliefs and attitudes, which are discussed in the current theory. The affective difficulties described by the participants in the current theory, and descriptions of how both the cognitive and affective processes affected their pain-behaviours and management of their chronic pain and disability, also fit within a cognitive-behavioural theory.

Other multifactorial theories discuss predisposing or vulnerability factors, often including relatively stable personality factors, including many of those found in the current study. These theories include the psychobiological theory, conditioned orthopaedic syndrome theory, biopsychosocial theory, psychosocial factors theory, multidimensional theory, socio-ecological theory, and the diathesis-stress theory (Clancy & McVicar, 1992; Flor *et al.*, 1990; Jensen *et al.*, 1991a; Kerns & Jacob, 1995; Kugelmann, 1997; Onorato, 1989; Talo *et al.*, 1995; Turk, 1996b; White, 1990). These theories stress the importance of learning, social influences, and affect regulation. The psychobiological theory discusses precipitating stimuli and responses. These include avoidance of activity due to the presence of acute pain, leading to affective, cognitive, and physical changes. These changes were clearly described by the participants of this current study, in the acute and chronic pain stages of their process, and often led to the misinterpretation of physical sensations. The psychobiological theory also claims

that learning processes maintain chronic pain. This relationship was also reported, particularly relating to significant others, in this present study. Other multifactorial theories discuss the importance of precipitating physical events (physical illness or injury) to changes in behaviour, affect, and thought caused by the pain. These theories maintain that social influences can increase the likelihood of the development and maintenance of chronic pain. These social influences were clearly described in this current study. In this study these individual factors were clearly linked by an explainable and ongoing process of the development and maintenance of chronic pain and disability. The diathesis stress theory of chronic pain is slightly different from the other multifactorial theories in that it suggests pain causes challenges and stress. It predicts that chronic pain will develop if the person already has a high level of stress and is not prepared for the challenges pain presents them with. The present study clearly takes the idea of diathesis stress further in suggesting not only what some of these challenges might be, and what factors might affect the existing level of stress, but also the factors involved in managing these challenges. It also presents a process by which these stresses and challenges may occur in the chronic pain patient.

The current study extends Violon's (1982) suggestion of the process involved in becoming a chronic pain patient. It identifies many of the vulnerability factors, including some of the family functioning, personal, and interpersonal disruptions that she suggests. The current study also includes affective changes that Violon (1982) discusses, particularly depression, in addition to difficulties in communication. The current theory includes much of what Violon suggested when she formulated her model, it also goes beyond her description of possible factors to integrate them, and many more, into an elaborate process of the development and maintenance of chronic pain and disability.

The proposed theory not only accounts for, and integrates, much of the present chronic pain literature; it also provides a much-needed specific and intricate, data-driven process theory, or micro model, of the development and maintenance of chronic pain and disability. The results of this study incorporate much of the extant chronic pain literature, integrating it more cohesively, while highlighting many additional areas for future research. Many aspects of the current theory, and associated concepts discussed, were not identified in the existing chronic pain literature. In these situations, the results of the current study were discussed in terms of the literature on the specific areas of the concepts concerned. Thus, the current study significantly helps to integrate the current chronic pain literature.

OTHER CHRONIC PAIN GROUNDED THEORY STUDIES

Other researchers have conducted qualitative studies into health-related areas, many of which have used grounded theory. Recently published research using grounded theory to examine issues in chronic pain includes Chew-Graham and May (1999), Hallberg and Carlsson (1998, 2000), and Snelling (1994).

Hallberg and Carlsson (1998) used grounded theory to examine aspects of the specific chronic pain illness, fibromyalgia. These researchers too, noted that the existing literature on chronic pain is mainly quantitative. They identified psychosocial vulnerability factors and maintaining factors, similar to many of the factors that formed part of the present study. As with the present study, they reported that

people who are insecurely attached are over-represented in chronic pain populations. They also noted that chronic pain affects a person's psychosocial situation and it is a major health problem in society in general (Hallberg & Carlsson, 1998). Psychosocial vulnerability factors discussed in Hallberg and Carlsson's (1998) study included traumatic life history, overcompensatory perseverance, pessimistic life view, and unsatisfying work situation. More specifically psychosocial factors included early loss, high degree of responsibility at an early age, social problems, and feelings of helplessness and hopelessness later in life. Maintaining factors included professional care, pain benefits, and family support. These were very similar to the factors found in the current study with a wider range of chronic pain causing difficulties.

Hallberg and Carlsson's (1998) research identified many of the traumatic life-events that were found in the present study. These significant events were related to subsequent helplessness. Their participants spoke of a chaotic life history with traumatic events. These included: the loss a parent at an early age through death, divorce, or adoption, and the fact that this was related to psychological trauma; feelings that their parents did not love them and that their needs were not met; a high level of responsibility early in life; starting work early in life, often while still at school; and social problems in their families, including alcohol abuse, violence, and psychiatric disorders. Their participants also expressed feelings of loss of control and power, and uncertainty, and some had attempted suicide. These events were clearly described by the participants interviewed for this thesis, along with similar emotional reactions to them. Hallberg and Carlsson's (1998) participants described what they called "over compensatory perseverance". They characterised this as their participants setting themselves high personal standards; feeling strong internal demands to be capable, effective, caring, and friendly; driving themselves harder than people in general; and describing themselves as very effective at work and at home. However, they often felt insufficient, had low self-esteem, and tried very hard to feel validated and acknowledged. These were very similar issues to those described by the participants in the current study.

Because of these difficulties in early life, Hallberg and Carlsson (1998) suggest that psychobiological self-regulatory mechanisms may become dysfunctional, and that this leads to increased health risks. These difficulties are similar to the background / vulnerability factors identified in the present study. They also found that their participants experienced negative interactions with health-professionals. Hallberg and Carlsson (1998) maintained that "progression towards illness occurs when distrusting and negative validating patterns dominate in the interaction with health care professionals and significant others" (p. 102). These were the qualities and experiences described by the participants in this current, more general, chronic pain study.

Hallberg and Carlsson's (1998) participants reported similar experiences to those found in the present study with respect to pain, management of their pain, and their reactions to pain. They reported that their participants had a pessimistic life view and had difficulty understanding the origin of their pain. The health-professionals' explanations were found to be biomedically focussed, and many of their participants had not received an understandable explanation for their chronic pain. Hallberg and Carlsson (1998) reported their participants' understanding of pain was strongly related to their ability

to manage their situation. They also maintained that their participants perceived that the meaningfulness of life had decreased, that they had no plans for the future, and that the pain seemed to demand most of their energy, attention, and interest. Because of this, it seemed that their pain was their whole life. These reactions were similar to those discussed in this current study. Encounters with health-care services described by Hallberg and Carlsson's (1998) participants included disbelief about the reality of pain, leading to hesitation in seeking health-professional treatment. Absence of a diagnosis increased this treatment-seeking hesitation, as did perfectionism. Findings on other health-professional management issues reported in Hallberg and Carlsson's (1998) study included: diagnosis provides a validation and reduced suffering, as did physical treatment; their participants reported many referrals for assessment for an organic cause and in an attempt to find a cure; they had contacts with many health-professionals; they had negative experiences with health-professionals' attempts to understand and treat their chronic pain; they used many different treatments, although they attempted not to use too many drugs; and there was a distinct lack of holistic management. Again these are experiences that were reported by the participants in this current study.

Hallberg and Carlsson (1998) identified benefits of, or advantages to, pain. These included their participants reporting: decreased responsibility, including adoption of a sick role; increased attention from family and friends; and when they were on the "sick-list", they felt as if they had a balance between demands and their resources. Their participants reported family support including: practical help, for example, with house cleaning and other everyday activities; emotional support; role changes within the family; partner responsibility for tasks that the participant usually performed; and that the pain caused an imbalance between the participant and their spouse with respect to the equality of their relationship. Their lifestyles often changed dramatically including their social, hobby, and leisure activities especially those outside the home (Hallberg & Carlsson, 1998). These were very similar experiences and issues encountered by the participants in this present study of chronic pain and disability. It is interesting to note that the general experiences and issues of a specific group of chronic pain-sufferers, as reported by Hallberg and Carlsson (1998), were extremely similar to the experiences of the group of chronic pain-sufferers interviewed for this thesis, who had a wide range of causes of pain. The current study organises the development and maintenance of chronic pain and disability factors into an easily understandable process that the participants passed through, rather than single factor theories of chronic pain. Hallberg and Carlsson (1998) also concluded: "no single factor in isolation can explain a chronic pain condition" (p. 101). They emphasised the importance of moving from the previous linear models to cyclical models with feedback loops and relationships among the different factors and symptoms.

Other grounded theory researchers have found constructs similar to those found in this current study. For example, Charmaz (1994a) documented themes that transverse different chronic illnesses, including self-esteem, continuity and change of self concept, emotions, information about illness, meanings of chronic illness, and ways of living with chronic illness. Strauss, Fagerhaugh, Suczek, and Wiener (1997) discussed the following characteristics of chronic illnesses: they are long-term, their outcome is uncertain, they require large amounts of care from a range of services, they are often related to multiple diseases, there are often conflicts of interpretation between patients and health-professionals,

and they are expensive to treat and manage. Increased technology has led to fragmentation of care for chronic illness. With this technology there is an increased probability that something will go wrong and the patient will feel dehumanised (Strauss *et al.*, 1997). Acute care in hospitals is only one discipline of care for those with a chronic illness. Other areas include techniques the patient can use to manage their illness and the actions of their significant others. Most research into chronic illness has been completed in hospital settings (Strauss *et al.*, 1997). The findings of Charmaz (1994a) and Strauss *et al.* (1997) and are again similar to the findings of this current study, which uses a more general chronic pain population.

This current theory of the development and maintenance of chronic pain and disability is consistent with many of the existing theories of chronic pain. It integrates them and provides additional areas in need of exploration. It has also produced a theory which includes the important element of process.

Chapter 5

CONCLUSIONS

This final chapter discusses the limitations of the present study. It also indicates possibilities for future research and considers clinical implications. Finally the primary conclusions of this study are presented.

5.1 LIMITATIONS OF THIS STUDY

This study involved a retrospective examination of many of the factors included in the present theory. There may be biases inherent in this type of research. There is the difficulty that information in the current study was collected retrospectively, therefore these life-stories may have been influenced by pain, frustration, depression, and loss of functioning Hallberg and Carlsson (1998). Memory of pain is thought to be affected by a variety of physical and psychological factors, which include pain-related, affective, and functioning variables (Bond & Pearson, 1969; Eich *et al.*, 1985; Erskine *et al.*, 1990; Hunter *et al.*, 1979; Jamison *et al.*, 1989; Kent, 1985; Linton & Gotestam, 1983; Linton & Melin, 1982; Roche & Gijssbers, 1986). Biases of memory affect recall, therefore information may be distorted, incomplete, or absent. Chronic pain may also be under-estimated in self-reports (Magni *et al.*, 1990). The present research was based primarily on participant report, via interviews and self-reported pain and functioning diaries, and also by the observation of small episodes of their behaviour. The study did not include the triangulation, which could have been gained by collaboration with health-professionals and significant others.

Interviews are also vulnerable to demand characteristics. The validity of verbal self-report is debatable (eg., Rennie *et al.*, 1988). However, the content of the participants' perception may be more important than the accuracy of their perceptions in many cases. This idea has been shown in the social support literature reviewed in section 4.1.3.4. In this study, interviews were conducted in both a social and a hospital setting. These settings may have influenced the data obtained, depending on the expectations of the participants in these different settings. In addition, participants may have been influenced by social desirability, especially given the findings of this study that many participants appeared to want to be accepted by the interviewer and others. However, Rennie *et al.* (1988) have suggested that, although it is impossible to know the "truth" of participants' accounts, multiple individuals stating similar experiences, as was found in this study, increases the credibility of individual

accounts.

Many of the limitations of this study are only limitations if this qualitative study is measured against quantitative criteria, as discussed in sections 2.2.2.5 and 2.3.5. Some examples of these quantitative criteria which are not met are that the sample was not randomly chosen, and therefore cannot be assumed to be representative of the general population, and nor can it be generalised in any statistical sense to the general population. The population of the current study were all Caucasian, recruited either informally or from a pain clinic. They were all based in Christchurch, New Zealand. The sample was small, which limits generalisation in the quantitative sense. There were also restrictions on the cause of pain, mainly because participant selection was chosen to fit within the "grey area". As a result of this the theory does not include comparisons to people who did not develop chronic pain, and where they might fit into the theory. Two other areas that were not examined were a wide range of pain-causing disorders, and other ethnic groups. However, any list of limitations of this kind is potentially endless. The question must be asked as to whether saturation was obtained in all aspects of this theory, or in fact whether it can ever be obtained. Saturation appeared to be obtained very early in this research process. Rennie *et al.* (1988) suggest that, when doing grounded theory, five to ten participants are usually sufficient to achieve saturation of categories, and thus serve as a basis for the creation of a theory. They also suggest that cross-validating the theory against additional participants is important. The current theory included sixteen formal participants. Validation of the theory was achieved using data from participants not included in the initial theory development.

The sample for the present study was chosen to obtain a variety of information in specific areas (such as cause of chronic pain) and to answer specific questions that arose (such as, whether length of time in chronic pain affected management strategies used) in order to increase the applicability of the theory created. Biases may have occurred in the method used to generate the sample, but assuming that "accidents" or pain-producing episodes are normally distributed in the general population, the commonality found among the participants is surprising. If the sample is not normally distributed, then it is possible that these vulnerability factors play a part in producing pain episodes. The causal factors involved in this vulnerability are unknown. Whether these participants were more vulnerable to pain-producing episodes, or just more vulnerable to developing chronic pain once they had a pain-producing episode, could not be determined by this study. However, given that these participants did have a pain-producing episode, the vulnerability factors provided a fertile substrate for chronic pain and disability difficulties.

Because of the method of recruitment, and the interview procedure used, the participants were not provided with an opportunity to examine the theory created for goodness-of-fit to their lives. However, most were interviewed over more than one session, and they received feedback from their previous interviews during subsequent interviews. Thus, they were given the opportunity to discuss and correct previous information.

In this study a single researcher was primarily involved in collecting and analysing the data. While this researcher was not experienced in this method, there was also input from a more experienced researcher. The primary researcher had a small amount of information about the general theories

in the chronic pain area, however the secondary researcher had very little existent knowledge of the chronic pain area. This was helpful, given that the researcher is the primary research instrument in the grounded theory method and biases are inherent.

5.2 SUGGESTIONS FOR FUTURE RESEARCH AND CLINICAL IMPLICATIONS

This study suggests several avenues for future research. Ideally, future research would be prospective, studying pain before, during, and after it actually occurred. This would reduce memory biases. A long-term prospective study following people from a young age, and in detail through an initial painful episode, acute pain, and on to chronic pain, if it occurred, would provide a wealth of valuable information on the factors that did or did not contribute to chronic pain. However, this would be logistically very complex, and unless regular contact was continued, much information about the initial painful episode and its process would still be obtained retrospectively. There are also ethical dilemmas of withholding assistance to these participants should they exhibit the symptoms found by this study to be important for the development and maintenance of chronic pain and disability.

The present study, and the theory it has proposed, immediately presents three avenues for further research. Firstly, research could focus on obtaining more detailed information for specific parts of this theory where areas have been highlighted, but are in need of further expansion. This research would need to be qualitative in order to expand areas of the present theory and to generate further hypotheses and areas to explore. Triangulation with other sources, such as health-professionals and significant others, or through further observation of behaviour, over a longer period of time, and in wider situations, would provide additional strength of information. This could be further enhanced by using participants with different chronic pain disorders, in addition to exploring the protective factors found in people with disorders that are thought to cause chronic pain, but who have not developed chronic pain or disability. This would allow for conclusions about transferability or generalisability.

Secondly, the theory could be qualitatively tested using a larger independent group of participants and an independent coder. Thirdly, the theory could be empirically and quantitatively tested, perhaps with the use of psychometric assessments. This would be logistically complex as the theory contains a multitude of complex interacting parts, although structural equation modelling could prove useful here. For many aspects of this theory there is a lack of effective measurement devices to appropriately assess the constructs. Research into many of these areas would require measures to be created and validated to access this information. Such future studies would either only study small specific parts of this theory or would be very long and complex. Information from such studies might be beneficial because information could then be statistically generalised from this theory to the population the participants were drawn from, or even the general population.

Lastly, and probably most importantly, additional work needs to be done to ensure that this theory is available to health-professionals in a working form, so that they and their patients can derive benefit. This would be useful in a number of ways for primary, secondary, and tertiary prevention. Prevention could occur through general practitioners, or other health-professionals, identifying patients

susceptible to developing future chronic pain and disability due to their vulnerability factors. These vulnerability factors would need to be addressed, or at least these patients educated on appropriate action, should they develop acute pain. If a person presented to a health-professional with acute pain, they could be very quickly screened with a checklist for vulnerability factors and these noted and directly addressed when planning a treatment or management programme. Such a checklist is suggested by this research, but would need extensive development. An example of a possible checklist is presented in Appendix D. In addition, health-professionals could be taught about helpful interactions and methods to increase communication, understanding, and the identification of an appropriate treatment or management programme tailored to a particular individual, not merely their physical pain condition. This might include identifying particular vulnerability factors, ways of interacting, beliefs about pain, and addressing and working with these issues in a mutually chosen management plan.

The present theory could be quickly and easily adapted for use by health-professionals who treat and manage chronic pain and disability. It is envisaged that this theory could act as a guide for health-professionals to the areas of chronic pain needing examination with particular patients. It could be used in consultation with the patient to tailor a management programme to best meet their needs. This tailored management programme would ensure that the patient benefited most from whatever treatment or management strategy they were engaged in for their specific pain condition. It would address the maintaining processes that were involved. Health-professionals could also be assisted in understanding the part that they play in the development of chronic pain and disability through their interactions with their individual patients. The theory also indicates that further research on the role that health-professionals play in the development and maintenance of chronic pain and disability is required. Parts of this thesis could also be a useful source for educating potential and actual chronic pain patients about the process involved in the development, maintenance, and management of chronic pain and disability.

5.3 CONCLUSIONS

Chronic pain is prevalent in many societies and its incidence is increasing. It is related to a large number and range of primarily negative consequences. These consequences affect the individual and their significant others, and also the society in which they live. There are currently many theories that attempt to account for chronic pain and disability. However, they generally focus on only one small aspect of the chronic pain domain. Treatment and management for chronic pain patients is ineffective for a large number of individuals. This may be a consequence of the theory on which they are based. Therefore a coherent theory of the development and maintenance of chronic pain and disability, which integrates the existing literature and other important factors is required.

The present research creates and presents a theory of the development and maintenance of chronic pain and disability. Although the participants all presented specifically with chronic pain, their real difficulties and variations seemed to be with regard to disability. The participants who had developed high levels of chronic pain, and particularly high levels of disability, were also found to have high

levels of significant issues in their background / vulnerability factors. These background / vulnerability factors were organised around the construct of attachment. Those participants with high levels of chronic pain and disability held a negative view of themselves and others, and thus adopted a fearful attachment style. This was present both before and after the onset of their pain and disability. Following the development of chronic pain these background / vulnerability factors became maintaining factors. The management decisions made by the participants also had a large impact on their chronic pain and disability. These decisions were based largely on the participants' implicit theories. Inappropriate strategies were often chosen. The participants, who developed a high level of chronic pain and disability, tended to have difficulties selecting and adhering to a management strategy that suited their beliefs and painful experience. The strategies they used in the acute pain phase were often unsuited to the treatment of acute pain. They tended to be strategies that might be more effective in the chronic pain management phase. The opposite was also true, with participants in the chronic pain phase using strategies that would be more effective if they had been suffering from acute pain. As a result, some of the participants caused additional painful damage to themselves by doing too much in the acute pain phase, and they experienced reduced functioning and increasing pain and disability in the chronic pain phase due to too little activity. These difficulties were compounded by the participants' implicit theories.

Implicit theories and cognitive variables, which were markedly influenced by attachment style, were reported to have a very large impact on the outcome of chronic pain and disability. This does not mean that other factors are not important, but that chronic pain and disability outcomes appeared to be mainly influenced by the person's attachment style and implicit theories. These need to be targeted in the chronic pain patient and in people who have the potential to develop chronic pain and disability.

It is postulated that the vulnerability factors for the development of chronic pain described in this theory are vitally important in the prevention of chronic pain and disability. These factors are "flags" that could be identified, perhaps with an instrument as simple as a short checklist, to identify people who are at risk of developing chronic pain in the community. It is possible that these issues could be identified and addressed, possibly through primary prevention, even before a person developed acute pain or disability. This strategy could be implemented in a general practice situation. Alternatively, and perhaps with greater practicality, these same vulnerability and maintenance factors could be used for secondary prevention. This could be effective if every person who presented with acute pain was screened for these factors and appropriate action taken if they were present. Such action would reduce the likelihood of chronic pain developing. For example, the health-professional could take time and effort to elicit their patient's beliefs about the causes of their pain and their expected treatments. Alternatively, the person could be referred to an appropriate health-professional or service specialising in managing people at risk of developing chronic pain. This secondary prevention approach assumes that the person has presented to a health-professional. For many of the participants of this study, this did not happen until some later stage in their pain process.

It is likely that many health-professionals currently practice many of the skills that are needed to ensure their patient's optimal recovery from acute pain. These skills include careful explanation of

the person's painful condition and eliciting motivation to adhere to an appropriate treatment. The proposed screen for vulnerability factors for chronic pain, would help health-professionals better identify and target each person's specific needs.

The present theory could also guide the development of appropriate management strategies. The appropriateness of these strategies is determined partially by the physiological aspects of the injury or illness, but the choice of strategies also needs to account for the patient's progression through their chronic pain process, and their implicit theories. If these factors are not considered, the prescribed management strategies are unlikely to be adhered to by patients. Adherence is also partially affected by the health-professional's communication style, which needs to be open, and aimed at clearly understanding the person's painful experience. Communication needs to include the patient's implicit theories about their pain, its causes, and the treatment strategies the patient thinks will help. Patients need to be given an opportunity to ask questions and feel that they have been understood. Any management strategies need to be clearly discussed with patients, so that they understand the implementation, and the risks and benefits of the proposed management. The patient needs to be motivated to use this particular strategy. This motivation needs to be addressed and encouraged and any possible associated problems discussed. Patients need to be actively involved in their pain management, taking some responsibility for its outcome. It is important that both health-professionals and patients are well informed about chronic pain and its management. A pamphlet could be produced to aid this, and to encourage discussion between the health-professional and the patient.

The present theory of this thesis can be used to help integrate many of the existing theories of chronic pain. As a result, it can be used to guide future treatment of chronic pain. Chronic pain treatment needs to be more holistic rather than treating just the physical, or other single causes of the pain. Other associated difficulties and consequences need to be addressed. For example, trauma, post-traumatic stress disorder, isolation, depression, and anxiety are common in chronic pain patients. These need to be addressed and treated, as these factors may serve to maintain chronic pain and disability.

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Appendix A

ETHICAL APPROVAL



University of Canterbury Private Bag 4800
Christchurch New Zealand
Telephone: 03-366 7001
Fax: 03-364 2999

12 September 1994

Ms J Jarvis
C/- Dr S Hudson
Department of Psychology
University of Canterbury
CHRISTCHURCH

Dear Ms Jarvis

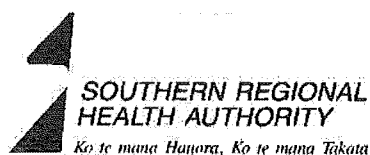
The Human Ethics Committee has considered and approved your research proposal 'Developing a Model of Chronic Pain' subject to approval be given by the Southern Regional Health Authority Ethics Committee.

Yours sincerely

A handwritten signature in cursive script, appearing to read 'Susan Holstein'.

S M Holstein (Mrs)
Secretary

Figure A.1: University of Canterbury Ethical Approval



CHRISTCHURCH
4th Floor
144 Kilmore Street
P.O. Box 3877, Christchurch
Telephone 0-3 372 1000
Facsimile 0-3 372 1015

ETHICS COMMITTEE
CHRISTCHURCH

Chair
Mrs E.A. Scragg
Administrator
Mr W.J. Perrott

31 August 1994

Ms Joanne Jarvis
Psychology Departments
University of Canterbury
Private Bag 4800
CHRISTCHURCH

Dear Ms Jarvis,

STUDY : DEVELOPING A MODEL OF CHRONIC PAIN (REF 94/781)

Thank you for the application to the Ethics Committee for consideration of the above study.

I am pleased to advise that at its last meeting the Committee has considered this study and granted ethical approval for it to proceed subject to:-

- a) Provision being made on the consent form for witness signature.
- b) That approval be noted on the information sheet as being approved by the Southern Regional Health Authority Ethics Committee (Canterbury).
- c) That the use of the word "model" be amended to "understanding".

Could you please forward your comments on these items for record purposes at which stage an unconditional approval will be prepared.

I wish you every success with this research.

Yours sincerely,

W.J. Perrott
ETHICS ADMINISTRATOR



CHRISTCHURCH
4th Floor
144 Kilmore Street
P.O. Box 3877, Christchurch
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21 September 1994

Ms. Joanne Jarvis,
Psychology Department,
University of Canterbury,
Private Bag 4800
CHRISTCHURCH

Dear Ms. Jarvis,

STUDY: DEVELOPING A MODEL OF CHRONIC PAIN (REF 94/781)

Thank you for your letter of 7th September 1994 confirming the changes to the ethics documentation for the above study.

The approval previously granted is confirmed and the study has ethical approval to proceed. Could you please arrange to forward a report on its completion.

I wish you every success with your research and future academic work.

A handwritten signature in dark ink, appearing to read "Wynton J. Perrott".

Wynton J. Perrott
Secretary/Administrator
Ethics Committee.

CHRISTCHURCH OFFICE - P.O. BOX 3877 CHRISTCHURCH
TEL: (03) 372 1000 FAX: (03) 372 1015

Figure A.3: Southern Regional Health Board Ethics Committee Approval Ammendment

Appendix B

INFORMATION SHEET

DEVELOPING AN UNDERSTANDING OF CHRONIC PAIN

The motivation for this research is to develop an understanding of chronic pain. More specifically, to answer the question of why acute pain becomes chronic in some individuals, when it does not in others. The study will examine why pain becomes chronic and how people with chronic pain respond to and manage their pain.

Chronic pain is defined as pain that has been present for a minimum of six months.

You will be interviewed individually. This study requires you to provide an autobiography. Then more specific information on particular topics. Basic information will be collected on your background. This includes what you were doing and how you were coping before the pain, and your family background. The injury and what happened next will be covered in detail. This will consist of behavioural information, thoughts and feelings. You will be asked to think back and put yourself through the behavioural experience, and asked to remember what you were thinking and feeling at the time. You will be asked about your reaction to the injury and what your life is like after the injury. How it affects your work, relationships, and activities. As well as that, you will be asked about how the pain affects you and your expectations and how you cope with the pain. Furthermore, how do you cope effectively and when you cope ineffectively.

This process of collecting data is non-critical and non-judgmental emphasising what is important to you, what happened to you and how you feel about it. This method should ensure that you experience no ill effects. You should leave the study with increased knowledge of yourself and how the pain fits in to your life. This should be a positive experience, although it is non-therapeutic. There are no risks to you from participating. All knowledge is strictly confidential.

You will also be required to keep a diary, everyday, over several weeks indicating how you manage your pain on a daily basis.

If you wish to, you could be involved in a longitudinal study, in which I will follow up a small number of participants over a minimum of a year. This will provide a current measure of chronic pain.

This interviewing process could take about ten hours of your time, over several weeks or months. Please be sure that you are willing to spend this time before agreeing to participate.

Participation is totally voluntary. You can withdraw from the study at any time, for any reason, if you wish to, without any adverse consequences.

Please ask questions about anything that you don't understand.

Appendix C

CONSENT FORM

DEVELOPING AN UNDERSTANDING OF CHRONIC PAIN

The reason for this research is to develop an understanding of chronic pain. It aims to identify the reasons why acute pain becomes chronic in some individuals, when it does not in others.

Participation is totally voluntary. There are no risks associated with participation. Hopefully you will find it a positive, learning experience.

You will be required to talk about your life and your experiences, especially related to your pain. This will take several hours, and several meetings to cover all the information that I require. You will also be required to fill in a diary for several weeks, this should only take a couple of minutes per day.

I would also like to access your medical records with respect to the injury, to obtain a medical diagnosis, and information about what treatments you have tried.

All information that you provide is strictly confidential. No one will have access to the information in any form that you could be identified.

You may withdraw from this study at any time, for any reason, with out adverse consequences.

Investigator:

Jo Jarvis
Psychology Department,
University of Canterbury,
Private Bag 4800
CHRISTCHURCH
Ph. 3667-001 ex 7179

I agree to participate in the study described above, on the undertaking that if at any time I wish to withdraw from the study I may, without prejudice, do so. All information collected will be confidential, as will the identity of the participants.

Name	
Signature:	Date:
Witness:	Date:
Investigators signature:	Date:

Appendix D

EXAMPLE CHECKLISTS

D.1 CHECKLIST #1 - PRIOR TO THE DEVELOPMENT OF CHRONIC PAIN

This checklist is based on the current research and could be used by a family general practitioner who knows the patient well to assess general vulnerability to chronic pain. It could be used either before the person develops acute pain or when the person first presents with acute pain.

Circle “Y” for “yes” and “N” for “no”.

Has the patient had a history of, or do they presently have, chronic pain or illness?	N	Y
Is the patient socially isolated?	N	Y
Does the patient have several close confidants? (e.g. 3 people he or she is close to and can talk about personal information to).	Y	N
Does the patient generally view him or herself positively?	Y	N
Does the patient generally view others and the world positively?	Y	N
Does the patient generally cope adaptively? (Is there an absence of unhelpful strategies such as alcohol, excessive work, or needing to be perfect?)	Y	N
Does the patient have a history of (perceived) family dysfunction?	N	Y
Does the patient have an open “curious” communication style? (e.g. does he or she ask for and discuss different treatment options with you)	Y	N
Does the patient resolve conflict adaptively? (e.g. has he or she disagreed appropriately with you)	Y	N
Does the patient immediately seek health-professional assessment/treatment when appropriate?	Y	N
Does the patient show evidence of adherence to, and success with, treatment?	Y	N
	Total	

The higher the number of answers circled in the right-hand column the higher the person’s vulnerability to develop chronic pain, therefore the higher their need for active intervention.

D.2 CHECKLIST #2 - AFTER THE DEVELOPMENT OF CHRONIC PAIN

This checklist is based on the current research and could be used by a family general practitioner or any other health-professional working with the patient, to assess the vulnerability to develop chronic pain from acute pain or to maintain their chronic pain. This could be used at any stage of the chronic pain process, and ideally be combined with the above vulnerability factors checklist.

Circle “Y” for “yes” and “N” for “no”.

Has the patient had a history of, or do they presently have, chronic pain or illness?	N	Y
Does the patient generally cope well? (Is there an absence of unhelpful strategies such as alcohol, excessive work, or needing to be perfect?)	Y	N
Has the patient immediately sought health-professional assessment/treatment when appropriate?	Y	N
Has the patient shown evidence of adherence to, and success with, treatment?	Y	N
Has the patient been able communicate their treatment beliefs to their health-professionals and discuss treatment options?	Y	N
Has the patient consulted many health-professionals?	N	Y
Has the patient's level of activity been consistent with his or her stage of progression through the pain process (e.g. acute vs chronic pain stages)?	Y	N
Has the patient used strategies that were appropriate to his or her stage of progression through the pain process (e.g. acute vs chronic pain stages)?	Y	N
Have the patient's beliefs been helpful and consistent with their health-professionals?	Y	N
Has the patient maintained appropriate balance between pain management and functioning?	Y	N
Has the patient adaptively adjusted to their pain?	Y	N
Does the patient have a high level of disability?	N	Y
	Total	

The higher the number of answers circled in the right-hand column the higher the person's vulnerability to develop chronic pain from acute pain or maintain their chronic pain, therefore the higher their need for active intervention to address these factors. If the health-professional knows the patient well enough, or asks the appropriate questions, checklist #1 could also be completed to assess some additional vulnerability / maintaining factors that could be addressed in the intervention.

D.3 PATIENT MANAGEMENT GUIDE - FOR HIGH LEVELS OF VULNERABILITY

If the patient scores highly on the questionnaire(s), they may benefit if their health-professional addresses the relevant factors. Ways of doing this might include:

- Be particularly clear in your communication and in identifying the patient's communication needs, e.g., be aware of using too much medical jargon, or underestimating the patient's understanding.
- Identify the way the patient prefers to relate to health-professionals and relate in a corresponding manner.
- Try to develop a trusting relationship with the patient.
- Work with the patient holistically.
- Aim towards management rather than cure, if this is appropriate (be realistic about the appropriateness of a cure expectation).
- Listen to them carefully and indicate that you understand them.
- Ask about concerns, worries and effects in addition to symptoms etc.
- Use management strategies consistent with their position in their process of pain (e.g., acute vs chronic pain stages).
- Address difficulties that are associated with the consequences of pain, in addition to the pain itself.
- Encourage appropriate help-seeking activities, from both health-professionals and significant others.
- Refer on to a specialist if appropriate, e.g., a multidisciplinary pain management centre, or holistic pain specialist.
- Educate the patient on acute pain and chronic pain in general and their specific difficulties.
- Give clear information (including written information) about the patient's problem and its management.
- Discuss the patient's beliefs about their pain and management strategies.
- Openly and non-threateningly discuss any differences in beliefs between health-professionals and the patient.
- Try to change beliefs if they are unhelpful, or refer them to a specialist for this.
- Discuss different management options and agree on the proposed strategies in a collaborative manner. Discuss possible barriers and solutions to these.
- Discuss and openly address issues of non-adherence or difficulties with the proposed management plan in a collaborative manner. Openly expect these difficulties.
- Encourage positive behaviour and adherence by providing compelling evidence for proposed changes or management strategies.
- Engage the patient's family and support system in their management. Educate these people on pain, chronic pain and its management in general, and the specifics of the difficulties of their significant other, and also the helpful and unhelpful roles they might play.
- Help the patient work on self-development, lifestyle balance, and/or relationship issues.

- Emphasise the importance of a balance between pain management and maintenance (or improvement) of everyday functioning. Aim, with the patient, to increase everyday functioning and decrease disability.
- Educate yourself and your colleagues on the management of pain and chronic pain and particularly the role of health-professionals in this.